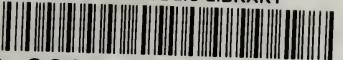


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THE ANNUAL REPORT OF THE SCHOOLHOUSE DEPARTMENT

FROM FEBRUARY 1, 1909, TO
FEBRUARY 1, 1910



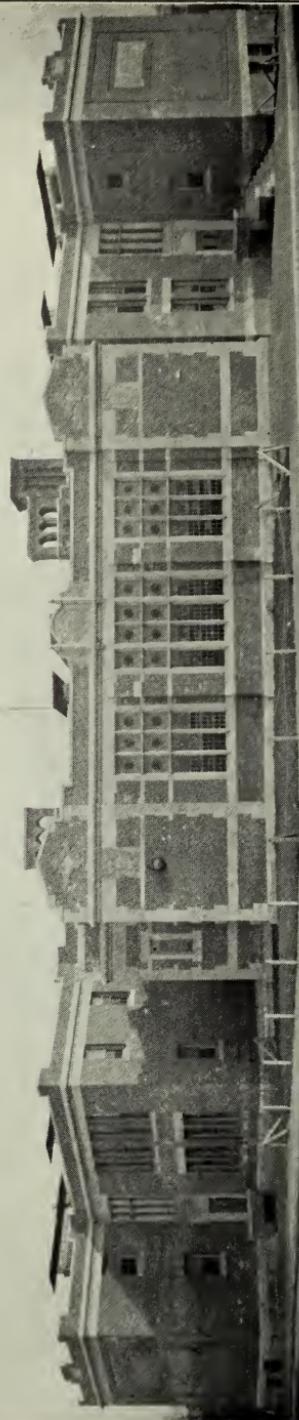
CITY OF BOSTON
PRINTING DEPARTMENT
1910



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BISHOP CHEVERUS SCHOOL, MOORE STREET, EAST BOSTON.
BRAINERD & LEEDS, Architects.



THE ANNUAL REPORT OF THE SCHOOLHOUSE DEPARTMENT

FROM FEBRUARY 1, 1909, TO
FEBRUARY 1, 1910



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CITY OF BOSTON
PRINTING DEPARTMENT
1910

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Roxbury Schoolhouse Department
Aug 1910

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BUILDINGS IN CHARGE OF SCHOOLHOUSE
DEPARTMENT.

Number of Permanent School Buildings in Charge of this Department	233
Of the above there are in use as Storehouses, etc.	2
Number of Portable Buildings	111
Number of Hired Buildings	26
Giving Class Rooms to the Number of	37
Parcels of Land Hired	2
Portables on above, giving Class Rooms to the Number of	4
Number of New Buildings Finished by Commission	32
Number of Buildings under Construction at the Present Time	1

ANNUAL REPORT
OF THE
SCHOOLHOUSE DEPARTMENT
FOR THE
YEAR ENDING JANUARY 31, 1910.

REPORT OF THE COMMISSIONERS.

HON. JOHN F. FITZGERALD,
Mayor of the City of Boston:

DEAR SIR,— In accordance with the provisions of chapter 473 of the Acts of 1901 the Board of Schoolhouse Commissioners submits herewith its eighth annual report, covering the period from February 1, 1909, to February 1, 1910.

I.

POWERS OF THE BOARD.

The Board was established by the Act of Legislature, chapter 473, Acts of 1901, and by this act its powers were defined. It has appeared, however, that the definition then laid down was either defective or incomplete. In 1904 the School Committee, believing that the Board of Schoolhouse Commissioners, which was wholly responsible for the number of its employees and their remuneration, should be financially responsible for administration expenses, petitioned the Legislature that the Schoolhouse Department should pay

such expense from its appropriation. This became law (chapter 376, Acts of 1904), but the School Committee failed to increase the appropriation for the Schoolhouse Department, which it is in their power to do, and the department was therefore crippled to this extent in its regular work. The principle covered by this act was undoubtedly right, and the Board regrets only that the expense must come out of its meager annual appropriation for repairs.

In 1906 the School Committee asked permission from the Legislature to take \$60,000 from the amount it was legally obliged to appropriate for the Board of Schoolhouse Commissioners and use this to pay overdue teachers' salaries. Permission was granted. (Chapter 205, Acts of 1906.) This was a relic of the old School Committee and is not likely to occur again. That both these bills were passed in face of the opposition of the Schoolhouse Commission and the Mayor gives indication of the difficulties that hamper the Schoolhouse Commission in the exercise of some of its powers.

In 1907 the School Committee, believing that the power of locating and determining the character and size of schools was too definitely placed in the hands of the Board of Schoolhouse Commissioners, petitioned the Legislature to allow the School Committee to designate not only the district but the character and size of the schools. As this was in accordance with the practice of the Board and the practice was apparently sufficiently safeguarded, it seemed an unnecessary transfer of powers from the Board of Schoolhouse Commissioners to the School Committee, but one that could not do any harm and would perhaps induce even closer co-operation. This became part of the act which provided for the new appropriation.*

In 1908, at the instance of the Finance Commission, the Law Department gave an opinion as to the powers of the Board that was against the practice of the Board and put into its hands powers that it did not desire. This related to the taking of land. The Law Department gave its opinion that where the sum named was within 25 per cent of the assessed valuation of the last three years the Board could make a valid agreement with the owner to purchase at that price and could direct the Street Commissioners to take the property at that price. This took from the Street Commissioners in these cases all discretionary power, made their action purely perfunctory and placed on the Board of Schoolhouse Commissioners the responsibility of deciding whether or not the price was an equitable one. The Board believes

* Chapter 450, Acts of 1907.

that the Street Commissioners are more competent to judge of such values and that the price should be left to them to settle. Where the bargain proposed is a good one the Street Commissioners would undoubtedly accept it, and where it is not the Street Commissioners would force a better one. The city apparently takes little or no risk of loss and some considerable chance of gain by allowing the Street Commissioners to review and pass judgment upon every offer made to the Board.

The land taken for the Abraham Lincoln School is a case in point. The Board could have ordered a taking at \$155,000. This was within the limit set by the act. It was not so ordered. The Street Commissioners reviewed all offers and awarded \$139,072.* Here the Board believes it is the best policy not to use its power — unless some special exigency makes it appear wise to do so.

In another case the Law Department gave an opinion as to the authority of inspectors. The Building Commissioner had his and the Schoolhouse Department had its own. In case of disagreement whose authority ruled? The Law Department gave an opinion that the Schoolhouse Commission, established by the General Court, was not subject to the supervision and control of the Building Commissioner, that no permit was required to build, nor any inspection necessary, except in so far as the Building Commissioner might wish to inform himself whether the building laws in matters of construction were being complied with. The building laws are indefinite and capable of many interpretations and in case of any difference of opinion as to what the law meant reference could be made to the Board of Appeal.

The Schoolhouse Department, acting under this opinion, filed plans and specifications and filled out a form of application for a building permit, but did not request the Building Commissioner to issue such a permit. The Board employs its own regular inspectors, a clerk of the works on the building all the time and special expert inspectors on heating, electrical and plumbing installations. The inspectors of the Building Department are therefore not required on the work, but the Schoolhouse Department welcomes the co-operation of these inspectors in securing good workmanship and full compliance with the law. In January, 1910, the Law Department reversed its opinion, stating that schoolhouses must have permits and were subject to the

* Further takings were made later, but the average price per square foot established by the first award was practically maintained.

Building Commissioner in all matters relating to means of egress. The Board, therefore, has returned to the previous practice.

The powers of the Board have been interpreted to mean that it was at liberty to undertake the erection of school buildings with its own force. In 1906 it took charge of the electrical engineering, placing Mr. B. B. Hatch in charge of this division. In 1907 it took charge of the heating engineering, placing Mr. C. F. Eveleth in charge of that division. It already had a competent civil engineer, Mr. H. H. Austin, and his division handled all civil engineering. The plumbing for new buildings has been executed by outside architects, but this and all plumbing done by the Board is under the supervision of Mr. W. P. O'Toole, sanitary engineer. It remained only to put the architectural division on a basis similar to the engineering division. In 1909 an examination was held by the Civil Service Commission for an architect to fill the position of head of this division. Of the successful applicants the one placed first by the examiners was appointed. The division now consists of an architect and four draughtsmen and is beginning to get into shape, so that the Board can undertake the erection of new buildings. Of the 1909 list two small buildings in the Sherwin-Hyde district were selected for the architectural division to handle. The press of summer work and especially the drawings required for major fireproofing repairs interfered with the study of the new buildings. It was not thought advisable suddenly to increase the division by the addition of a large number of new men unfamiliar with the schools and little progress was made by the Board as compared with the work done by outside architects.

Now the work is organized, the press of other work over, and the division may well be strengthened with well trained draughtsmen and made really efficient. The resulting economy of establishing the engineering department is given under "Policy of the Board," page 30.

The powers of the Board are definitely limited to the expenditure of sums that are determined upon either by the Legislature, in the case of loans, or by the School Committee, in the case of the annual appropriation. On the former the Board of Schoolhouse Commissioners has always had an opportunity, taking advantage of its thorough and complete knowledge of the physical condition of the schools, and the growth of the school population, to present a comprehensive and fairly conclusive statement. With the latter, however, the annual appropriation for repairs, the Board of School-

house Commissioners has no opportunity, except through the annual report, to present the needs of the city schools or to influence in any way the amount that the School Committee sets aside for this purpose.

Every report since the Board was organized has called attention to the fact that there is not a sufficient amount appropriated, first, to keep the schools in good condition, and, second, to meet the constantly increasing demands of the city for better and more varied education. These are two distinct matters. The first means making good ordinary wear and tear. Many of our buildings are old and the work done under this head includes often substantial renewals. Over this the Board has some control. The second means new rooms, new equipment for all the modern requirements, kindergarten, manual training, cooking, industrial work, drawing, evening and vacation schools, new branches in the high schools and new schools for technical work, and, most fundamental of all, the reduction in the size of the classes. All this means expense, and over this the Board has no control and no recourse, except the ungracious one of refusing to do the work and thus appearing in opposition.

Last year the Board succeeded in getting through the year without a deficit, but only by deliberately neglecting a large amount of routine repair work that ought to have been done. Elsewhere in the report, Appendix IX., will be given a statement as to the amounts needed in the immediate future for certain recurring annual repairs, which are of the nature of fixed charges and are practically imperative. There are other expenses that do not appear on the face to be so imperative, such as keeping in good condition the buildings that have been erected during the last ten years. To neglect to keep these buildings in good condition is false economy.

Repairs are imperative and funds should be provided for this purpose. New accommodation for the annual increase in elementary school population is also imperative. New accommodation and equipment to meet modern educational requirements, like other good things, are desirable if one can afford them.

The Board cannot do this work and do it properly with the funds at present available. It rests with the School Committee to increase this appropriation. The Board respectfully urges that the importance of this matter should be brought to the attention of the School Committee by your Honor.

II.

WORK EXECUTED UNDER THE APPROPRIATION
FOR LAND AND BUILDINGS FOR SCHOOLS.

The work done this year by the Board will be considered under four heads:

1. Report of progress on buildings described last year and on the new work undertaken since then.
2. The revision of standards of cost to agree with reduced size of rooms.
3. Future accommodation.
4. Report on fire protection.

(1.) REPORT OF PROGRESS ON BUILDINGS DESCRIBED LAST
YEAR AND ON NEW BUILDINGS UNDERTAKEN SINCE
THEN.

Of the eleven items connected with previous loans, spoken of in last year's report (page 4), four were reported complete and final figures given, five were provided for in the 1908-09 list and will be reported in detail later, leaving two, the High School of Commerce and the Robert G. Shaw, Germantown.

Robert G. Shaw District. In the Robert G. Shaw district, land about two acres in area in the Germantown section was voted by the Board on January 15, 1909, and the taking was made by the Street Commissioners on January 21, 1909, \$2,486.73 being paid for 82,891 square feet of land. At date no building in this section has been authorized by the School Committee.

The High School of Commerce. During the session of the General Court for 1909 an act was passed providing for the establishment of a High School of Commerce in a building accommodating also the administration offices of the School Committee and the Schoolhouse Commission. A full statement regarding this will be given later in this report.

The list of items furnished by the School Committee for 1907-08 was given last year and is as follows:

	Pupils.
1. Agassiz district, elementary school, lower grades .	264
2. Wells district, elementary school, lower grades .	300
3. Bennett district, elementary school, lower grades .	100
4. Adams district, elementary school, lower grades .	200
5. Prince district, high school (Mechanic Arts High School)	800

	Pupils.
6. Phillips district, elementary school, upper grades .	880
7. Edward Everett district, elementary school, upper grades	616
8. Brimmer district, elementary school, upper grades,	1,496

On June 29, 1907, as previously reported (reports of 1907-08 and 1908-09), the Board returned the list of items, with the appropriation for each item, as follows:

<i>Item No. 1.</i> — Agassiz district, elementary school, upper grades (building and furnishing)	\$62,000
<i>Item No. 2.</i> — Wells district, elementary school, lower grades (building and furnishing)	50,000
<i>Item No. 3.</i> — Bennett district, elementary school, lower grades (building and furnishing)	15,000
<i>Item No. 4.</i> — Adams district, elementary school, lower grades (building and furnishing)	15,000
<i>Item No. 5.</i> — Prince district, high school, Mechanic Arts High School (building and furnishing)	500,000
<i>Item No. 5.</i> — Phillips district, elementary school, upper grades (land, building and furnishing)	358,000
	<hr/>
	\$1,000,000

Of these Items 2, 3 and 4 were reported in full in the report for 1907-08.

Item 1.— *Agassiz district, elementary school, lower grades, the Francis Parkman School.* This building was reported completed last year and nothing now remains but to give the final figures, which are as follows:

	Original Contracts.	Complete Contracts.
Building contract	\$32,400 00	\$34,404 36
Plumbing contract	1,750 00	2,059 55
Heating contract	6,077 00	6,067 00
Electrical contract	4,692 00	4,654 31
	<hr/>	<hr/>
	\$44,919 00	\$47,185 72

Item 5.—The Mechanic Arts High School. This item also was reported as complete in last year's report. The figures to date are as follows:

	Original Contracts.	Contracts to Date.
Building contract	\$346,191 00	\$344,536 24
Heating contract	53,400 00	52,802 08
Plumbing contract	23,878 00	24,816 97
Electrical contract	32,250 00	33,623 00
	<hr/>	<hr/>
	\$455,719 00	\$455,778 29

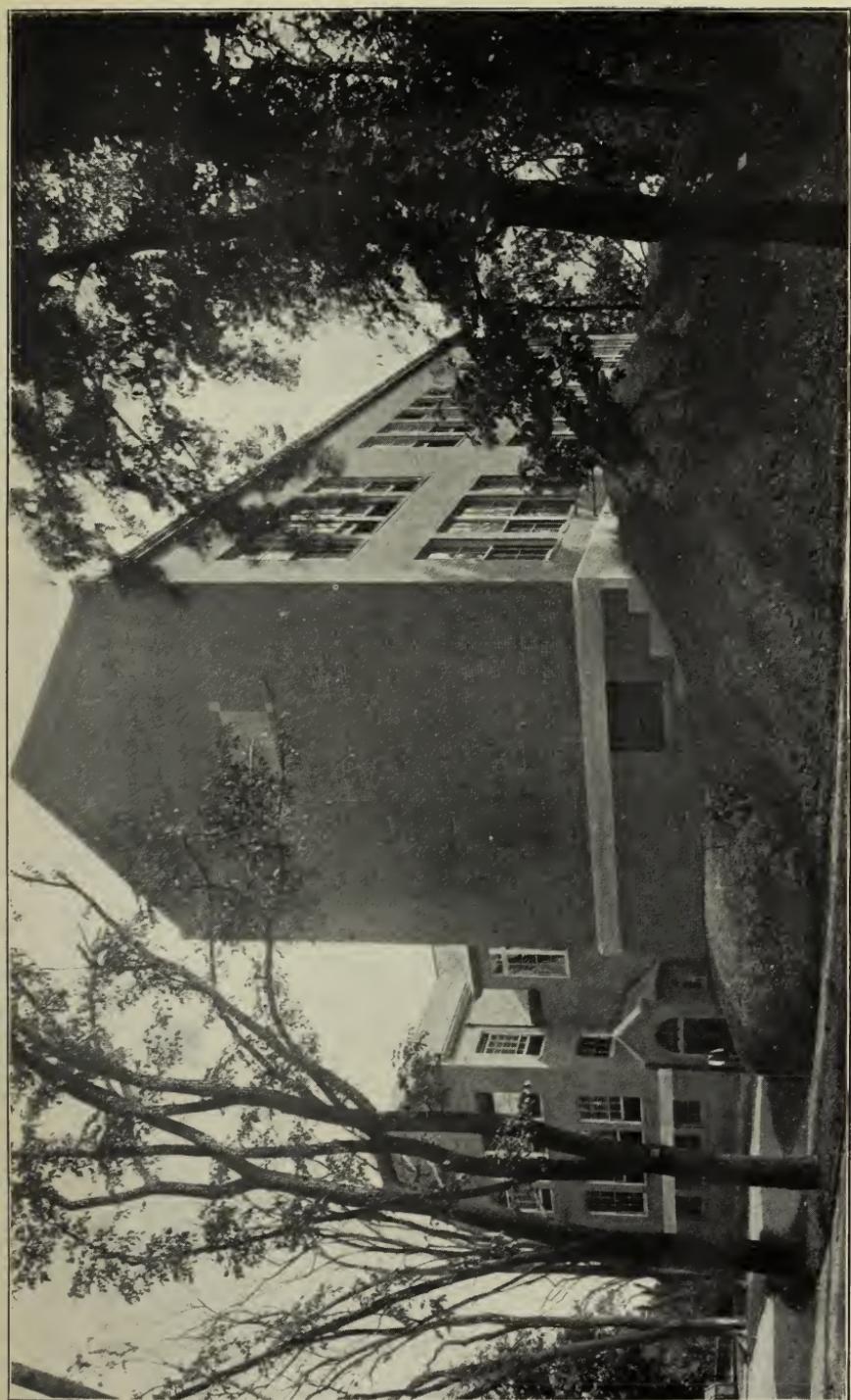
The shop equipment has been gradually furnished during the year 1909-10. The complete equipment of this addition was delayed by the School Committee to enable them to study and inform themselves more fully as to the direction in which this work should grow. Six months or more of consultation with individuals and committees resulted in confirming for the most part the advice given originally by the headmaster. The equipment for the woodworking has been installed at a cost of \$17,880.68, and metal working equipment has already been ordered at a cost of about \$16,173.09.

On January 14, 1910, the Board voted to concur in the vote of the School Committee to transfer \$8,500 from the balance of the appropriation on the Dudley district elementary school and \$18,000 from the balance of the appropriation for the Blackinton district elementary school to the appropriation for the Mechanic Arts High School for special equipment.

Item 6.—Phillips district, elementary school, upper grades, the Peter Faneuil School. As reported last year Mr. James T. Kelley was appointed architect and he was authorized to proceed with plans for an eighteen-room, lower elementary building. The actual accommodation of the building is a seventeen-room building, as one room was appropriated for manual training. The suggestion of the special committee was followed in this building of enlarging one room on each floor beyond the forty-four limit, so that there should be rooms available for classes which might occasionally overrun the limit, and also that there should be an area larger than that of the reduced class room available for those purposes which need the space, manual training, cooking or kindergarten rooms; in this case manual training room. The building was properly rated as an eighteen-room building and consequently allowed 30,000* cubic feet, a total of 540,000 cubic feet at 22 cents, \$118,800. Contracts were awarded as follows: June 3, 1909, John F. Griffin Company, building contract, \$90,781; June 2, 1909, P. J. Sullivan, plumbing contract, \$4,437; June 2, 1909, McLean & Cousens, heating contract, \$7,977; July 1, 1909, E. C. Lewis, Inc., electrical contract, \$4,239.

The economy in this building was due to the fact that the plan, a very compact one, brought the cube down to 432,000, instead of 540,000 allowed. On this reduced cube the price per cubic foot overran the 22 cents, but the final result was an economical building and the cost per pupil \$158. The school has been named the Peter Faneuil School.

* Only 28,000 is now allowed.



NATHAN HALE SCHOOL, CEDAR STREET, ROXBURY.
PARKER, THOMAS & RICE, Architects.



ADDITION TO LONGFELLOW SCHOOL, FARQUHAR STREET, ROSLINDALE.

C. HOWARD WALKER, Architect.

The original contracts and contracts to date are as follows:

	Original Contracts.	Contracts to Date.
Building contract	\$90,781 00	\$89,749 25
Heating contract	7,977 00	7,977 00
Plumbing contract	4,437 00	4,437 00
Electrical contract	4,239 00	4,239 00
	<hr/> <u>\$107,434 00</u>	<hr/> <u>\$106,408 25</u>

This completes the list of 1907-08.

The list of items designated by the School Committee for 1908-09 was as follows:

	Pupils.
1. Edward Everett district, elementary school, upper grades	616
2. Brimmer district, elementary school, upper grades,	1,760
3. Eliot district, administrative office.	
4. Blackinton district, elementary school, upper grades	704
5. Dudley district, elementary school, lower grades	528
6. Henry L. Pierce district, high school (Dorchester High)	420
7. Longfellow district, elementary school, lower grades	352

On March 20, 1908, as already reported, the Board returned this list with the amount of each item up to and including a total expenditure of \$1,000,000, as follows:

1. Edward Everett district, elementary school, upper grades	\$125,000
2. Brimmer district, elementary school, upper grades	450,000
3. Eliot district, administrative office	5,000
4. Blackinton district, elementary school, upper grades	140,000
5. Dudley district, elementary school, lower grades	105,000
6. Henry L. Pierce district, high school (Dor- chester High)	125,000
7. Longfellow district, elementary school, lower grades	50,000
	<hr/> <u>\$1,000,000</u>

Item 1.—The Edward Everett district, elementary school, upper grades. This building was completed and occupied

on October 5, 1909, and was fully reported last year. The final figures are as follows:

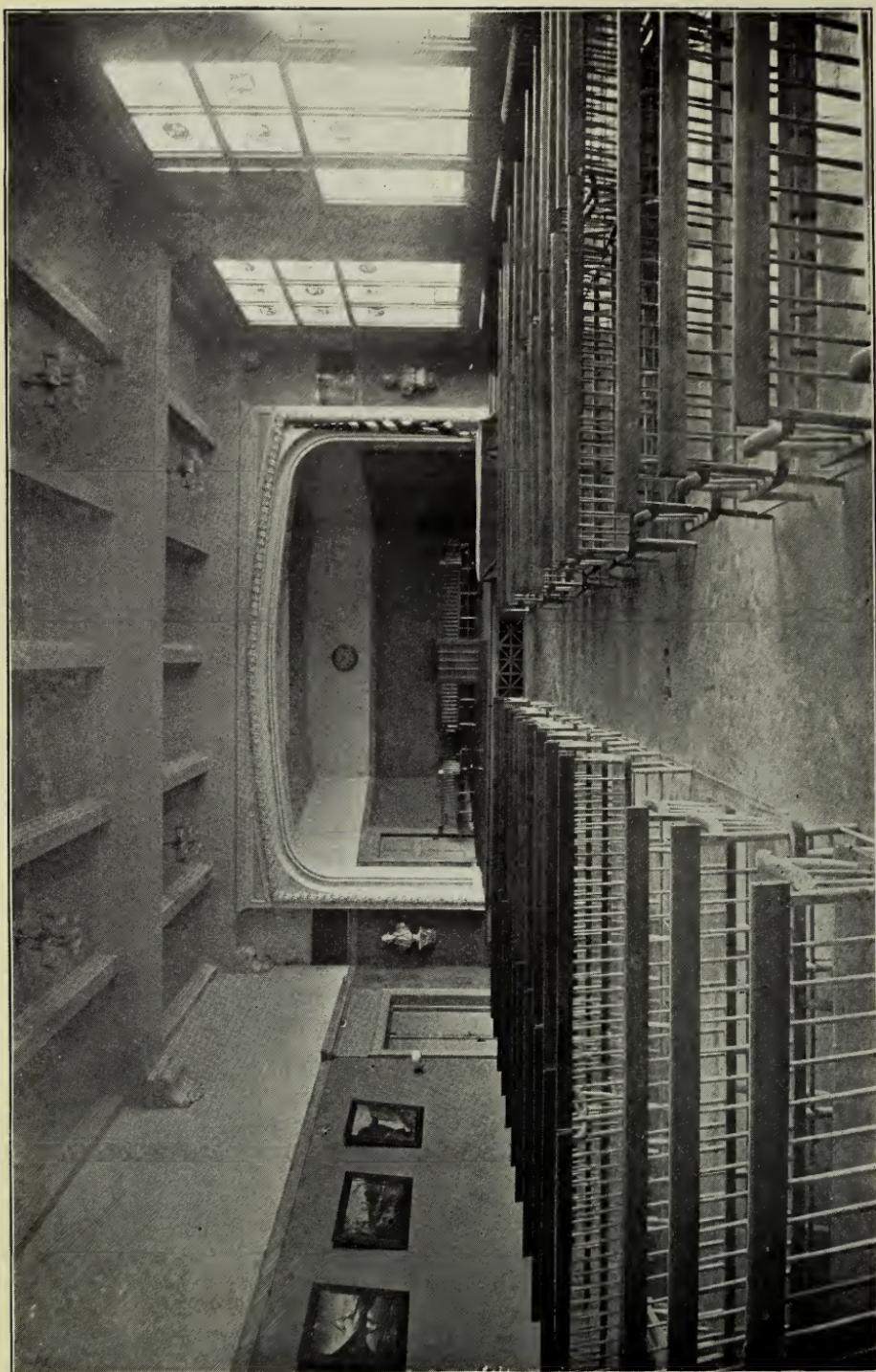
	Original Contract.	Complete Contract.
General contract	<u>\$123,400 00</u>	<u>\$107,515 43</u>

Item 2.— Brimmer district, elementary school, upper grades. As reported last year the Board voted on August 1, 1908, to request the Board of Street Commissioners to take certain land on Ferdinand, Knox, Melrose and Bay streets. This land contained about 37,870 square feet and was offered to the Board for about \$155,000. On this particular taking the Street Commissioners made an award of \$139,000, and the parcels that have already been settled for have been approximately on the square foot price of this award. Since the original taking the Board deemed it advisable to increase its takings to develop to better advantage the school yards and the adjacent Skinner School on Fayette street. Two small takings, containing respectively 934 and 1,035 square feet, were made, and a small parcel of land, containing 19 square feet, was taken in order to straighten an awkward boundary line. The taking will probably amount to \$141,062.98, and this amount deducted from the reduced appropriation, \$440,000, as reported last year, leaves \$298,937.02 for the building and the various incidental expenses. The appropriation will be insufficient. This, however, was expected when the appropriation was set at \$450,000, and it was owing to this fact that the joint board were willing to take \$10,000 from it, as an additional appropriation to complete would be needed in any case.

Mr. A. W. Longfellow was appointed architect and, although plans were under way when the report went to press last year, they are only just on the market now. No building that has gone through the hands of this Board has been subject to so much popular attention as this school, and this has resulted in innumerable conferences and in a great many changes and modifications of the original drawings. Even with all these delays it is hard to excuse the amount of time that has been taken in the preparation of plans and specifications.

The building as a forty-room upper elementary, with four rooms allowed for the hall, is allowed forty-four rooms at 30,000 cubic feet, *i. e.*, 1,320,000 cubic feet at 22 cents, \$290,400.* Bids for the general building contract were

* The 22 cents were supposed to cover the cost of piled foundations, *i. e.*, 2 cents for foundations, 20 cents (as in the Cheverus) for the remainder. In view of the uncertainty of the market the architect was allowed \$300,000.



HALL, BISHOP CHEVERUS SCHOOL.
BRAINERD & LEEDS, Architects.

opened January 18, and the contract was awarded on the same date to the low bidder, the Whiton & Haynes Company, in the sum of \$229,800. On January 31, 1910, bids for installing a plumbing system were opened, and the contract was awarded on the same date to the low bidder, Pierce & Cox, in the sum of \$14,865.

This problem is further complicated now by the proposed widening of Ferdinand street. When the plans were first made provision was made for a possible widening to 58 feet. A still further widening to 80 feet is now under consideration and, if this is carried through, the whole building must be set further to the north and more land bought, which will mean a considerable additional expenditure. On December 29, 1910, the Street Commissioners had a hearing on this subject and on January 18, 1910, informed this commission that they proposed to take no action in the matter.

Item 3.—Eliot district, administrative office. This was fully reported last year.

Item 4.—Blackinton district, elementary school, upper grades, the Bishop Cheverus School. This item was reported last year. The building was completed and occupied on September 8, 1909.

The final figures are as follows:

		Original Contracts.	Contracts to Date.
General contract	:	\$81,392 00	\$80,268 04
Heating contract	:	11,975 00	11,975 00
Plumbing contract	:	4,875 00	5,040 31
Electrical contract	:	4,844 00	4,793 00
		<hr/> <u>\$103,086 00</u>	<hr/> <u>\$102,076 35</u>

The cost per pupil of this building is \$159.18, and the cost per cubic foot 19 cents.

The original appropriations were \$34,000 for the land and \$140,000 for building and furnishing. The complete cost of this item was approximately \$145,000, leaving a balance of \$29,000. Of this balance there was transferred by joint vote of both boards the sum of \$10,000 to the appropriation for the addition to the Girls' High School and \$18,000 to the appropriation for the Mechanic Arts High School equipment.

Item 5.—Dudley district, elementary school, lower grades, the Nathan Hale School. This was fully reported last year and the building was completed and occupied on September 8, 1909.

The final figures are as follows:

		Original Contracts.	Complete Contracts.
General contract	.	\$54,765 00	\$54,599 35
Heating contract	.	6,667 00	6,682 00
Plumbing contract	.	3,368 00	3,397 47
Electrical contract	.	2,520 00	2,553 00
		<hr/>	<hr/>
		\$67,320 00	\$67,231 82

The cost per pupil of this building is \$140.08, and the cost per cubic foot 20 cents.

The original appropriation was \$105,000, and of the balance remaining unexpended, \$12,779.73, there was transferred to the appropriation to purchase land in the Phillips Brooks district the sum of \$2,200 and to the appropriation for the Mechanic Arts High School the sum of \$8,500.

Item 6.—Henry L. Pierce district, high school (Dorchester High Annex).

This building, having nothing in it that differentiated it from an ordinary elementary school, was rated as such in making the allowance, and when the size of the building was increased it became above the basement an eighteen-room building. In view, however, of the fact that there are a number of rooms equipped in the basement as fully as if they were class rooms and these rooms are entirely above grade, it seemed fair to consider the building a twenty-room building, allowing 30,000 cubic feet like an elementary school and 22 cents per foot. This would have meant \$132,000 for the cost of the building and about \$105,000 for the general contract. When bids were opened for the general contract the lowest was \$122,395. After long discussion with the low bidder and the architects, the Board, being unable to get anything even approaching a deduction of \$20,000, and being convinced that the changes that the Board proposed in the plans and specifications represented nearly if not quite that amount, rejected the low bid and awarded the contract to the second bidder, from whom the Board obtained for the various changes a deduction of over \$19,000. The figures, including this deduction, are as follows:

		Original Contracts.	Contracts to Date.
General contract	.	\$125,875 00	\$106,666 00
Heating contract	.	12,827 00	12,827 00
Plumbing contract	.	5,709 00	5,709 00
Electrical contract	.	5,889 17	4,626 60
		<hr/>	<hr/>
		\$150,300 17	\$129,828 60

Even with these figures the appropriation is not at present sufficient and a slight increase will be necessary before the building is occupied.

This completes the list of 1908-09.

The amount of the appropriation for the year 1909-10 for new school buildings was \$500,000. On January 20, 1909, the School Committee sent to this Board the following list of items:

	Pupils.
Adams district, elementary school, upper grades	616
Sherwin district, elementary school, upper grades	704
Lewis district, elementary school, lower grades	440
Dwight district, high school (Girls' High School)	320

On January 28, 1909, in accordance with chapter 450 of the Acts of 1907, this Board returned to the School Committee the list of items with the amount which it considered would be required for each item set against it. The list was as follows:

1. Adams district, elementary school, upper grades	\$115,000 00
2. Sherwin district, elementary school, upper grades	175,000 00
3. Lewis district, elementary school, lower grades	85,000 00
4. Dwight district, high school (Girls' High School)	90,000 00
*Administration expenses of year	35,000 00
	<hr/>
	\$500,000 00

Item 1.—Adams district, upper elementary school. On April 12, 1909, Messrs. Brigham, Coveney & Bisbee were appointed architects for this item. Land was advertised for on April 16, 1909. A hearing was held on May 7, 1909, and the advantages and disadvantages of a site on the hill and a site on the flats were carefully considered. It was finally decided to make an agreement with the owners of the land on the flats, as binding as such an informal agreement could be, that the Board would take land there next year, but for the immediate work on this item would take land on Webster street. Thirty-three thousand four hundred and eighty square feet of land, with the buildings thereon, were

* In previous years the portion of administration expenses chargeable to land and buildings has been taken from the original appropriation. Now it is provided for each year.

taken on August 10, 1909. The land has been partially paid for and the total expenditure will probably be about \$30,000.

It seemed unlikely that the building could be completed within the year, and when funds were urgently needed to establish the Trade School for Girls the School Committee and the Board, by joint vote, transferred \$40,000 from this item. This amount and sufficient to cover the cost of the land will have to be appropriated to make this item complete again.

The allowance for this building is as follows: Fourteen rooms and two for the hall, a total of sixteen rooms, at 30,000 cubic feet and twenty-two cents per cubic foot, \$105,600.

Here, as in the Peter Faneuil, two of the class rooms are large enough to seat fifty, and the manual training is located below one of these larger class rooms and the cooking room below the other. This building will be named the Samuel Adams School and will be let shortly after February 1.

Item 2.—Sherwin district, elementary school, upper grades, 704 pupils, or sixteen rooms. The appropriation for this item was \$175,000. When this amount was fixed it was the intention of the superintendent, as expressed to the Board, that the Sherwin should be rearranged for a mixed school, upper elementary grades, that the Hyde School should be rearranged for a mixed school, lower elementary grades, and that a new lower elementary building of twelve rooms should be built. This, with the four rooms gained in the hall of the Hyde, would make the sixteen rooms contemplated by the order of the School Committee. Later it was decided that it was inadvisable to change the Sherwin and the Hyde and that for the present, at all events, they would remain separate schools for boys and for girls, and that instead of one lower elementary of twelve rooms two buildings should be built, each containing eight rooms, one of these two to be planned for an addition of eight rooms and an assembly hall, so that it would be eventually an upper elementary school.

The Board advertised for land and opened bids on March 8, 1909, held a hearing on March 16, 1909, and on April 15 requested the Street Commissioners to take 27,508 square feet on Ruggles street, at a cost of \$13,227.70, which includes taxes of \$227.70. They also requested the Street Commissioners to take 43,979 square feet on Hunneman street. This was done and the Street Commissioners made an award and settled at a cost of \$34,778.78, which includes taxes of \$201.84.

On the first of these lots, the smaller one on Ruggles street, the eight-room lower elementary was planned. The allowance for this, on a standard basis of 30,000

cubic feet per room at twenty-two cents, would be \$52,800. As will be pointed out later, it is seen that the allowance of 30,000 cubic feet for a lower elementary school is more than necessary. On this lot, however, there is piling, so that 22 cents a cubic foot on the full cube will probably be necessary to cover the cost. It is estimated that with the land and the furniture the amount of the appropriation necessary for this item will be about \$70,000. It will be named the Lafayette School.

The Hunneman street lot is a similar proposition as far as the original building is concerned, except for the fact that it must contain a boiler room and coal pockets large enough for the boilers of the future building. This might slightly increase the cost of the building. Taking the building at about the same price as the Ruggles street and the land and furniture, \$90,000 to \$95,000 would seem to be sufficient. These two items, therefore, can apparently be executed within the original appropriation. This building will be named the George T. Angell School.

Item 3.—Lewis district, elementary school, lower grades. On February 13, 1909, the Board advertised for land, and a hearing was held on March 15, 1909. On April 3, 1909, the Board requested the Street Commissioners to take 45,000 square feet on Hutchings street, for which was paid \$15,750. This is rather a larger amount of land than is usually taken for a lower elementary school, but in view of the future increase of the school to an upper elementary and the fact that the land could be purchased at a reasonable price, the Board and the superintendent felt that they were justified in purchasing this amount. In making up the figures but \$12,500 had been allowed originally for land. At the reduced allowance of 28,000 cubic feet per class room instead of 30,000, and 22 cents per cubic foot, the allowance on this building would be about \$62,000. If these figures are met it would seem possible to keep within the appropriation.

On May 10, 1909, Messrs. Newhall & Blevins were appointed architects for this item. A ten-room building has been planned, so that ten rooms more and an assembly hall can be added. This building, like the two previously mentioned, has two class rooms that are larger than the standard and which will accommodate fifty pupils.

The building will be named the William Lloyd Garrison School and will be let shortly after February 1.

Item 4.—The Dwight district, high school (Girls' High School). Land for this addition was bought in 1902 and

\$14,000 was paid for 4,660 square feet. The original appropriation, which was known to be somewhat inadequate, was increased by concurrent vote of the School Committee and the Schoolhouse Commission September 20, 1909, from \$90,000 to \$105,000. The architects, Messrs. Coolidge & Carlson, were appointed April 12, 1909, and the increased appropriation above referred to was advised when study by those concerned in this school showed clearly that a building somewhat larger than was originally contemplated was necessary if the girls were to have reasonable accommodation in their gymnasium. Even now it seems doubtful whether this appropriation is sufficient on account of the cost of the work in the old building, made absolutely necessary in connection with the erection of the new. The accommodation is eight class rooms of the standard high school dimension, 26 by 32, and a gymnasium and lunch room.

To further this work without interfering with the use of the school this winter special contracts were made for the work necessary in the old building, all of which are charged against this appropriation. They were as follows:

Carpentry in connection with new toilet room	\$1,229 00
Plumbing in connection with new toilet room	1,363 00
Marble in connection with new toilet room	995 00
New boilers	1,596 00
Setting and piping boilers	2,750 00
Gymnasium apparatus	1,200 00
<hr/>	
	<u>\$9,133 00</u>

This finishes the list of 1909-10.

By special act, chapter 446 of the Acts of 1909, an appropriation not to exceed a total of \$600,000 was authorized for the erection of a High School of Commerce, to contain also accommodation for the School Committee and the Board of Schoolhouse Commissioners.

On June 26, 1909, the Board advertised for land and on July 19, 1909, a hearing was held on these various offers. None of the parcels offered seemed to the Board as desirable as the land on Warrenton and Common streets adjacent to their own property, the Brimmer School. The Board consulted with the chief owner of this land, the Massachusetts General Hospital, with the superintendent, the committee on high schools, the master of the High School of Commerce and Messrs. Fish, Rothwell, Filene, McSweeney and Tuttle,

representing the Chamber of Commerce, and, in accordance with the unanimous opinion of all these authorities, voted on November 8, 1909, to take this land. Under the terms of the act it was necessary to have the consent of the School Committee to the location, because the building was to contain accommodation for them. After receiving the approval of the superintendent and of the Mayor the taking was therefore sent to the School Committee on December 17, 1909. Certain owners asked for a hearing; the School Committee in consequence withheld action. The hearing was held by the Board of Schoolhouse Commissioners on January 14, 1910, and shortly after, on January 17, the School Committee approved the taking. The papers went to the Street Commissioners on January 19. This long interval from June 26, 1909, to January 19, 1910, is mentioned here as an illustration of the many unavoidable delays which accompany any such complicated transaction.

On the 28th of October, before the actual taking had been made, but when the Board had received the opinion of all the various bodies interested, Messrs. C. Howard Walker and Kilham & Hopkins were appointed joint architects. An agreement was made whereby they are employed on a salary basis.*

In the original estimate of the cost of this undertaking \$150,000 was estimated as the probable cost of the land. It seems likely that the land may run beyond this amount. The building was one difficult to estimate beforehand, but when the sketch plans were made by the department in July, 1909, it was estimated that the building would run to 1,900,000 cubic feet and the cost to about \$437,000, and, as far as could be estimated at that time, it would appear that \$675,000 would more nearly represent the total cost of the undertaking than the \$600,000 contemplated by the act. This was reported in October, 1909, to the special committee on high schools and to the committee of the Chamber of Commerce, and the chairman of the Board stated that in his judgment the total cost of the undertaking might run from \$650,000 to \$675,000. It was not, therefore, without full understanding on the part of all concerned of the possible increased cost of this undertaking that the Board proceeded with the taking of the land.

The sketch plans are now well under way and are being studied by those connected with the High School of Commerce, by the School Committee and by this Board.

* As this document is going to press about March 25, it is perhaps pertinent to add that at this date the taking has not been made, owing to the fact that the survey is not complete and the lack of the survey has stopped the architects in their work.

(2.) THE REVISION OF STANDARDS OF COST TO AGREE WITH REDUCED SIZE OF ROOMS.

Since last year's report a modification has been advised by the superintendent in the previous rule which fixed the rooms at a limit to accommodate only forty-four. Now a certain number of rooms are made large enough to accommodate fifty. This allows an occasional class above the standard size and also provides spaces which are large enough for manual training, cooking and kindergarten rooms. The Board has figures on the Peter Faneuil as let and on the Abraham Lincoln as partially let and can now check further the conclusions reached last year. The following table shows the modified standard and compares with it the actual figures on the building referred to. Neither the Dorchester High Annex nor the addition to the Girls' High School are given, as these are connected with old buildings and are not the same problem as the elementary schools.

The modified standard is to allow 28,000 cubic feet per class room (instead of 30,000) in the lower elementary, and 30,000 per class room in the upper elementary, with two or four rooms, according to the size of the school, added to cover the cost of the hall. In both cases the cost per cubic foot is at 22 cents. The class rooms are rated at forty pupils for the standard and fifty for the oversize rooms.

NAME.		Cu. Ft. per Class Room.	Cube.	Cost per Cu. Ft.	Total Cost.	Cost per Pupil.	Rated Number Pupils.
Nathan Hale, lower elementary, first class, except roof, twelve class rooms.*	Allowed. Actual.	28,000 27,781	336,000 333,379	\$0 22 20	\$73,920 00 67,231 82	\$154 00 140 08	480
Peter Faneuil, lower elementary, first class, eighteen rooms.†	Allowed. Actual.	28,000 24,000	504,000 431,886	22 24	110,880 00 106,402 25	154 00 141 87	750
Bishop Cheverus, upper elementary, first class, except roof, sixteen rooms, two rooms allowed for hall.*	Allowed. Actual.	30,000 29,748	540,000 535,474	22 19	118,800 00 102,076 35	185 00 159 18	640
Edward Everett, upper elementary, first class, except roof, fourteen class rooms, two rooms allowed for hall.*	Allowed. Actual.	30,000 32,000	480,000 516,678	22 20	105,600 00 107,515 43	188 00 191 99	560
Abraham Lincoln, upper elementary, first class, forty rooms, four rooms allowed for hall.‡	Allowed. \$ Actual.	30,000 26,330	1,320,000 1,158,533	22 24	290,400 00 280,000 00	181 00 162 79	1,720

* No oversize room. † Three oversize rooms. ‡ Twelve oversize rooms.

§ Electrical and heating contracts estimated, not awarded.

This result is a cost per pupil that should not be exceeded and may be lowered, for

Lower elementary					\$154 00
Upper elementary, large					181 00
Upper elementary, small					185 00

The first experiment, the Edward Everett, exceeded these figures; the Hale, the Faneuil, the Cheverus and the Lincoln have bettered them. In this connection it may be interesting to compare these costs with other schools built elsewhere. In considering these, however, one must bear in mind that few cities build and equip as thoroughly as Boston and that nearly all our buildings have grounds about them which are finished for use by the pupils and the cost of which is included.

Philadelphia has recently built the Southwark School, which would be rated by us as having thirty-three rooms, a very large building, which should be very economical. The following are the figures taken off on the same basis as the figures that we take of our schools:

NAME.	Cu. Ft. per Class Room.	Cube.	Cost per Cu. Ft.	Cost of Building.	Cost per Pupil.
Southwark, thirty-three class rooms, first class, upper elementary.....	39,063	1,289,075	\$0 19	\$248,669 00	\$150 70

Our least expensive upper elementary schools have cost \$160 per pupil. This Philadelphia building is first class construction and equipped approximately like ours, but has no light fixtures, few telephones and bells and few clocks. The piping for supplies is galvanized iron where ours is brass.

Two buildings have been built for the city of Chelsea of second class construction. The Williams School compares fairly well with the Cheverus, having twenty class rooms and an assembly hall, where the Cheverus has sixteen class rooms and an assembly hall. Both have the very desirable feature of an assembly hall on the first floor. The following are the figures on the Williams:

NAME.	Cu. Ft. per Class Room.	Cube.	Cost per Cu. Ft.	Cost of Building.	Cost per Pupil.
Williams, twenty-two class rooms, second class, upper elementary, two class rooms allowed for hall.....	42,700	939,163	\$0 17	\$160,500 89	\$160 50

The Cheverus cost \$160.84 per pupil and is first class except the roof frame. It has both a cooking room and manual training room, neither of which is in the Williams. Chelsea has put her money into a very large hall, where Boston has put it into first class construction and fuller educational equipment. The Cheverus, moreover, has the modern and more costly small class room.

The Shurtleff is a large upper elementary school which would compare favorably with the Holmes. The Holmes has twenty-four class rooms and a hall on the second floor two stories high. The Shurtleff has the same number above the basement and a hall on the third floor which is only 15 feet high. It has, however, six spaces in the basement, two of which might be counted as class rooms. Allowing for twenty-six rooms the Shurtleff shows a cost of \$124 per pupil. Without these it shows \$134 per pupil, so that with second class construction and a hall poorly located the building makes a somewhat better showing than the first class upper elementary building of Boston, and is about the same as our lower elementary cost, *e. g.*, the Sarah J. Baker School, \$134. The figures on the Shurtleff are as follows:

NAME.	Cu. Ft. per Class Room.	Cube.	Cost per Cu. Ft.	Cost of Building.	Cost per Pupil.
Shurtleff, twenty-six or twenty-four class rooms, second class, upper elementary....	32,721	981,631	\$0 17	\$161,203 88	\$124 00 or \$134 00

The Oliver Wendell Holmes cost \$163 per pupil and has a good hall and fully equipped rooms for cooking and manual training.

One other example is taken from Schenectady buildings, built by the city engineer. They are distinctly engineering structures, simple, substantial and well built, but lacking a good deal of equipment which we think essential and

wholly lacking in the elements of good design, both inside and outside. The Robinson Street School has sixteen rooms and the figures are as follows:

NAME.	Cu. Ft. per Class Room.	Cube.	Cost per Cu. Ft.	Cost of Building.	Cost per Pupil.
Robinson Street, sixteen class rooms, first class, lower elementary	29,564	473,021	\$0 19	\$89,431 65	\$111 79

In the light of all these I think the City of Boston may feel reasonably assured that its buildings are being built well, are fully equipped and are economically constructed.

(3.) FUTURE ACCOMMODATION.

The report on new accommodation of last year (page 16) closed with this statement: "With the items on this list cared for, and the passage of the two bills, substantial progress will have been made towards meeting the pressing needs in both elementary and secondary education." In the face of this the School Committee is asking for a very large additional appropriation to meet pressing needs. This requires explanation. When this report was made it was understood by the Board that no attempt would be made to force the application of the reduction of the size of classes in crowded districts where the fifty-six seats were needed, but that such changes would come gradually with the changes in school population and the erection of new buildings. It was also understood that old buildings not up to modern standards, but sound and serviceable, would be retained, and that old buildings that had outlived their usefulness would be replaced by modern ones gradually, as has been done during the last ten years.

The School Committee, however, believe that the reduced class should be made a reality at once all over the city, and that all buildings distinctly below modern standards in construction, in light, air, space and sanitation be replaced as early as practicable by new buildings. If the city is prepared to pay for this modern equipment it is undoubtedly a good thing to have, but the statement made last year was nevertheless substantially accurate.

Few people, even among those who are familiar with school affairs, know the amount of work that has been done in the last ten years to improve the hygienic conditions for

the children who are in our old buildings. The Board of Health made a report in 1900 on all school buildings, from which it appears that of the 198 schools only 81 were in good sanitary condition. Of course of the 117 reported on unfavorably some were safe, but merely not modern; many, however, were distinctly unsafe. There were then 90,606 children in the 198 schools. Of this number 34,881 were housed in the 81 buildings classed as safe. Now there are 229 permanent schools (not including 111 portables, of which there were only 9 in 1900), housing 95,000 pupils, and 87,336 of these pupils are in the buildings that come in the class rated safe in 1900. The new buildings erected since then are better in every way than any buildings the city had in 1900.

These lines indicate fairly accurately the conditions in 1900 and 1910. The black, children housed under poor sanitary conditions—white, under good.

89,261 children in 198 buildings in 1900.
54,380 children in 117 poor buildings.
34,881 children in 81 good buildings.

95,447 children in 229 buildings in 1910.
7,601 children in 17 poor buildings.
87,846 children in 212 good buildings.

It will be noticed that the portables are omitted. There were nine in 1900. There are over 100 now, housing over 5,000 children. These buildings have good light and air and use the sanitaries of the adjacent school, which in most cases is in the good and not the bad class. Most of these 5,000 children are receiving their education under good conditions.

The old buildings were criticised by the Board of Health on the grounds not only of poor sanitation but poor ventilation. Now this latter does not rank at all with plumbing. Bad drains and defective plumbing are an active danger not to be avoided simply by the use of care. Poor ventilation can be improved if not entirely overcome by an intelligent use of the heating apparatus and good plain outside air. A poor heating and ventilating system may be made to yield good results. Moreover, a good system may be entirely

defeated by careless or unintelligent handling. Many of our schools have systems depending wholly or in part on fans. The School Committee, with a view to economy, ordered fans stopped each day at the close of school. The janitor is encouraged, even urged, to show economy in coal consumption. The fan is stopped when the children leave, all circulation of air stops, windows are not opened, as it will cost coal to raise the temperature when once lowered, and besides frost might nip the plants in window boxes. Fires are banked and the air of the school session carefully retained in each room until just before school opens. Theoretically it is then blown out and fresh warm air blown in. The actual result of following this plan depends on the janitor, but it is safe to say it is never good. An intelligent janitor who aims for fresh air rather than a record in coal consumption, aided by a teacher who is not afraid of seeing the temperature drop from 70 degrees to 55 degrees or 60 degrees for a few minutes, can have class rooms in an old building with no ventilation except by gravity, and not much of that, quite as fresh and wholesome as the average modern class room.

Many of the evils that local bodies call to the attention of the School Committee or this Board could be remedied by the use of a little common sense and without the expenditure of anything except thought.

This much is in explanation of the statement in last year's report and its apparent conflict with the request of the School Committee for more funds than are at present provided for new buildings. Of the bills referred to, that for the High School of Commerce became law, that for the school on the embankment was, as usual, given leave to withdraw.

The West End is still among the most crowded districts and provision should be made to care for the children of the Washington and Wells. The Peter Faneuil will relieve the immediate pressure in the Wendell Phillips and the Bowdoin, but will not allow for the abandonment of the Sharp and the Somerset. The development of approaches to the Cambridge Bridge and the basin dam may affect school population in this part of the West End, but many rooms (from sixteen to twenty-four) are needed to relieve existing pressure and provide for the abandonment of the Baldwin and the Emerson on Poplar street.

Recently school population has been at a standstill in the North End. With the return of prosperous times immigration may at any time wholly change this condition and the

Pormort at least ought to be replaced by a better building. Another urgent need in the North End, not for accommodation but for economy, is a central heating plant. This will be spoken of under "Repairs."

The Comins, which has been steadily growing for years, has now reached a point where a new building is a necessity, and there has been a sudden growth in the Phillips Brooks district which shows every sign of being a permanent increase. Here also accommodation is urgently needed.

In a number of districts the purchase of land for future improvement is desirable. The Oak square end of Brighton and the Corey Hill end of the Washington Allston district will require accommodation in the near future. The Beech street end of the Longfellow and the Lauriat avenue end of the Roger Wolcott are both localities that should be provided for. Land on the flats below the Adams School is also needed for the rapidly growing Italian colony there. The present law contemplates action on the part of the School Committee at the beginning of each year for the needs and appropriation of that year. It would be of advantage in developing a steady policy if a study were made looking further ahead, so that the Board could take preliminary steps in connection with land in advance and be prepared to push construction through promptly when the appropriation is made. This year under the new charter no list could be prepared by the School Committee previous to February 7.

The above refers only to elementary needs. Work already in hand will care for the Dorchester High, the Girls' High, the High School of Commerce and the Girls' Trade School, and the Girls' High School of Practical Arts is fairly well accommodated in half of the Baker. This building, originally intended for a lower elementary school, has been used first for upper elementary and now half for high school, each change of occupation meaning needless expense. So much work has now been done to fit it for its high school occupation that perhaps it would be well to turn it over completely to this growing school. This would mean a rearrangement of lines in the Lewis, Phillips Brooks, Hugh O'Brien and George Putnam districts.

Certain amounts must be appropriated in 1910 to make up deficiencies. The appropriation for the Abraham Lincoln was known to be insufficient and some \$60,000 will be needed for this. The Adams appropriation was based on a building on the Plummer lot, but it was wisely decided to buy land and build elsewhere; \$75,000 will be needed there. The

Dorchester High addition has a handicraft equipment that calls for more money, the appropriation for the addition to the Girls' High is insufficient, and the new Girls' Trade School, established in the old building of the Sacred Heart Academy, will require some money expended, chiefly in modern plumbing. Altogether \$175,000 to \$200,000 of the \$500,000 available in 1910 will be required to complete work already under way and the remainder should go toward elementary accommodation in Roxbury and land in outlying districts. This leaves the West End unprovided for, which, in view of the uncertainty of the development there, may well be postponed for another year.

Roxbury is the pressing need in 1910, and this can apparently be cared for with the amount available. If to this is added accommodation at Orient Heights and some purchases of land, the city will be well provided for in its elementary schools.

(4.) FIRE PROTECTION.

When the Board was established in 1901 the appropriation for land and buildings was applicable to fire protection, and each year until that appropriation was expended work was done for this purpose and so reported. After 1906 the appropriation for land and buildings was confined wholly to new accommodation and consequently all further repairs looking toward fire protection were chargeable against the general repair fund. In 1906 the Fire Department reported on the conditions existing in various schools and the Board replied in detail to this statement, reporting what had been done and the inadequacy of the provision made by the School Committee for the annual appropriation to do further work as rapidly as was desirable.

As pointed out year by year in the reports, the annual appropriation for repairs made by the School Committee has been invariably the minimum allowed by law, and when in 1908 Mayor Hibbard requested a statement of what was necessary for fire protection the Board reported in full, and as a result a special appropriation for this purpose was set aside from the appropriation for land and buildings. The letters referred to above, from the School Committee January 17, 1906, the reply of January 19, 1906, from the Mayor March 10, 1908, and the reply March 18, 1908, are given in Appendix VIII.

The Board thereupon resumed vigorously the work that had been partially suspended since 1906, and reported last year that fifteen schools had been protected in the basement,

seventy-six had been provided with fire drill signals, and twenty-one had the exits improved. Under all these headings work has proceeded. In the order of importance good exits and sure signals have come first, as being most vital for the safety not of the buildings but of the children, and practically everything is complete under these heads. All exits have been made clear, all doors opened out and hardware changed so as to prevent their being locked from the inside, and the installation of the new fire signal system is almost finished throughout the city. Coincidentally the School Committee have improved the fire drill and this is now wonderfully perfect. No one who sees the drill, even in one of our old buildings, under the most unfavorable conditions, can feel any anxiety about the children in case of fire. The Board looks upon fire escapes as being of more service in the protection of property than of lives, and money has been expended for fire escapes only where the condition of the building seemed extra hazardous. The detailed statement of the expenditure of the \$115,000 appropriation for this purpose is given in Appendix I. The protection of basements will go forward steadily during the summer, generally in connection with major heating repairs that are necessary. In this connection it may be noted that greater safety as well as economy would result if the old heating apparatus of adjacent schools could be replaced by one central outside heating plant, thus decreasing the fire risk in the old buildings and economizing in fuel and labor. Such wise expenditures of large amounts are impossible under the present system of annual appropriations. There is quite a list of buildings that come in a class where extensive repairs to the basements would seem unwise expenditure. In this list are the buildings that ought soon to be abandoned and those which must soon have new heating apparatus. Taken as a whole the great majority of school buildings are in a safe condition and there are none where the conditions endanger the children.

III.

REPAIRS.

Last year the Board succeeded in finishing the year without a deficit, or rather without carrying over any unusual amount of bills to be settled in 1909. As pointed out (pages 20 and 21), this was accomplished by taking advantage of the good work done in previous years in painting, furniture and blackboards,

eliminating all large work on these lines and omitting everything that could by any means be avoided. It was hoped that by starting fair with the 1909 appropriation all this work could be resumed, the usual work performed, the School Committee supported in their policy of expansion and new undertakings, and the appropriation made to cover all expense. Work was laid out and plans were made for the summer work on this basis, but before June it was evident that no amount of care or economy could obviate the necessity for the usual monthly expenditure on small but imperative repairs, and that the balance in June was wholly inadequate to carry out the work planned for the summer. Retrenchment was unavoidable, and much that was desirable and much that seemed almost essential was inevitably omitted. By September 1 the unappropriated balance was approximately \$9,100, and the Board again faced the usual conditions at the end of the year. It was forced to refuse every request, whether from masters, the superintendent or the School Committee, that was not absolutely essential, and this attitude was not a pleasant one for the Board to maintain.

The causes of this constant trouble with the annual appropriation have been repeatedly pointed out in the annual report,—an appropriation for repairs decreasing, the work to be done with this appropriation steadily increasing. It is not only that the city has more schools to care for, but that the School Committee, advancing on modern lines wholly admirable, is committed to work that means a large expenditure each year chargeable against this same appropriation. In 1908 the Board spent about \$40,000 for new accommodation and new equipment. In 1909 it spent some \$65,000 for the same purposes. It has now requests from the School Committee and plans for new accommodations for 1910 which represent \$70,000. Yet each year the School Committee has appropriated the minimum allowed by law, and has asked the co-operation and support of the Board for every new enterprise, and has not hesitated to reduce the scanty appropriation when it needed funds. A brief review of action taken by the School Committee since 1906 will illustrate this.

January, 1906, the repairs of their own building on Mason street were put on this department. January, 1906, by act of Legislature the School Committee were allowed to take \$60,000 from the appropriation to pay salaries to teachers. March, 1906, the School Committee, against the advice of the Board, surrendered the Webb School, making new accommodations necessary. April 2, 1906, the Board was called upon

to equip a building for the new High School of Commerce. September 10, 1906, the system of nurses was begun. In 1907 the Board was requested to protect from damage schools where vacation work and play yards were established. June, 1907, the Board was requested to change plumbing in two schools so that they might be used as mixed schools and to equip Lyceum Hall for Girls' High School of Practical Arts. October, 1907, the High School of Commerce was moved to the Patrick A. Collins School. November, 1907, manual training was established in the East Boston High School. In January, 1908, free evening drawing schools were recommended. In February, 1908, manual training in all high schools was advised. In November, 1908, the Board was asked to equip the refectory building at Franklin Park for school use. In February, 1909, the Board was requested to fit up additional quarters for the School Committee on Tremont street. In March it was requested to fit up the Sarah J. Baker School for the Girls' High School of Practical Arts. In April, 1909, the Board was requested to remodel and equip the Pierpont School. In May, 1909, industrial work in elementary schools was begun. In June, 1909, the Board equipped rooms in the Mechanics Building for the High School of Commerce. In September, 1909, a rented apartment was equipped for the Girls' High School of Practical Arts. In September, 1909, industrial work was started in the Glenway School and evening work in various schools, and a homemaking class in the Charlestown High was recommended.

In addition to these detailed matters there is the general policy of reduction in the numbers in a class, which means more rooms and equipment elsewhere; and there is also the demand for fresh air rooms. All this means expense in addition to that which is always necessary in the maintenance of the plant.

The Board therefore has made a careful study of the recent expenditures in past years and on the strength of that will ask the School Committee to consider the desirability of making a larger appropriation for the Schoolhouse Department for repairs, and also of consulting with the Board before adopting any policy which will mean expense for this department.

Broadly speaking, the work of the department done under the annual appropriation for repairs may be divided under four headings: (1) structural renewals; (2) improvement in conditions as to health and safety; (3) new accommodation; (4) new equipment. Under (1) would come replacing defective boilers, unsafe plumbing, leaking roofs, unsafe construc-

tion etc., and also all minor imperative repairs. Under (2) better plumbing, ventilation, fire protection. Under (3) portables or other temporary accommodation. Under (4) equipment for new work, cooking, manual training, kindergartens, industrial work, fresh air rooms, etc. (1) and (3) must be met; (2) and (4) ought to be met. A definite line cannot always be drawn between these four, but the following figures are approximately accurate. (1) and (2) are classed together as being repairs; (3) and (4) are classed together as being new accommodation and equipment.

In 1908-09 the Board's appropriation available for repairs, after deducting fixed charges of \$39,110.82, was spent thus:

Repairs	\$231,238 03
Equipment	45,797 25

In 1909-10:

Fixed charges	\$42,199 22
Repairs	240,722 49
Equipment	42,199 22

For 1910-11 the Board estimates tentatively its budget as follows:

Fixed charges	\$45,000 00
Repairs	339,050 00
Equipment	71,668 00

It seems to the Board evident that while it might reasonably be expected to repair and maintain its buildings and take care temporarily of the annual increase of scholars and keep within the appropriation, it cannot be expected to meet all the expenses connected with the reduction in the size of classes,* the development of industrial and vocational work and the increased demand for various advances in methods of conducting secondary education. The Board is wholly in sympathy with the School Committee, believes in its advanced methods and would support it in every way if adequate funds were at its disposal, but without such funds it must always be in the false position of seeming to obstruct.

With the more complete establishment of our engineering and architectural divisions the Board is in a better condition to estimate accurately in advance and plan for the economical execution of its major repairs. Boilers have a definite

* Certainly as far as it applies to children of school age.

life and a fairly accurate estimate of annual renewals could be made many years in advance.* A thorough knowledge as to plumbing conditions makes it simple to estimate the cost of renewal each year, as one after another the old plants outlive their usefulness. The work of the Board that is its peculiar duty can therefore be accurately estimated; but the work which the School Committee puts upon it cannot be estimated without advance information from the School Committee. This the Board believes should be given, and no work involving expenditure on the part of this Board should be undertaken until the School Committee is assured that the expense of the work can be met. The Board therefore requests co-operation with the School Committee and a larger annual appropriation.

IV.

POLICY OF THE BOARD.

The Board has as yet made no change in the employment of architects when on the commission basis, nor has it sufficiently developed its architectural department as to make it possible to undertake all the new buildings. The architects appointed this year have been appointed on the old basis, except in one instance, and are receiving 5 per cent on the building and plumbing and $2\frac{1}{2}$ per cent on the heating and electrical work. The Board feels justified in this on the ground that it furnishes so much as to make the architects' service a partial service. On the High School of Commerce, a large school, complicated by including offices for the School Committee and Schoolhouse Department, the Board, following the method adopted on the Normal Group, appointed two architects; but instead of paying them on a commission basis, employs each on a salary and then pays the cost of draughting. On both salary and draughting there is an outside limit. This appears to be a very fair arrangement, particularly on a problem requiring study so much detailed as this. The cost of the building and the probable length of service were both taken into consideration in determining the outside limits. There is also a provision to allow of extension if there is good reason for it. The usual form for architects' services is given in Appendix V.

The cost of elementary schools remains about the same, but the Board is asked to have a certain number of oversize rooms in all new buildings and the architects are allowed

* See Appendix IX.

the extra cube thereby involved. This does not materially affect the cost per pupil and the basement area under these larger spaces is better adapted to the requirements of cooking and manual training. Fresh air rooms are also demanded, and as this appears to mean merely casement windows this also can be done without increased cost. The demand for industrial work in the elementary schools is going beyond cooking and sloyd and is now more distinctly vocational. This has not yet been asked for in any new buildings. If it were it would add materially to the cost per pupil and the cost should be carefully considered before adoption.

The same demand for industrial work in the high schools has been largely met by schools for special purposes. Beside the Mechanic Arts High the city has now the High School of Commerce — both of these for boys — and the Girls' High School of Practical Arts and the Girls' Trade School — both for girls. But industrial opportunities are being demanded in the regular high schools also. It is to be hoped that this development will be allowed to grow naturally and not be forced, and that the School Committee will count the cost of installing and equipping this work as well as maintaining it when established. The burden of the former must necessarily fall chiefly on the Schoolhouse Department.

The engineering departments are now fully established and all work of heating and all electrical work is done by the Board. It is done better than when handled by outside engineers, for the force is employed in nothing else and can therefore give its undivided attention to school problems. The conference with other school engineers is an accomplished fact. An association has been formed which now includes the engineers and architects regularly and solely in the employ of the boards of education of the large cities, and the following cities have membership: New York, St. Louis, Kansas City, Boston, Philadelphia, Newark, Cleveland, Grand Rapids and Rochester. The first meeting was in New York in 1909. The second meeting will be in St. Louis in March, 1910. Boston has been represented at each by its heating, electrical and plumbing engineers and the executive clerk, who is secretary-treasurer of the organization. The Board firmly believes in giving its support to these annual conferences.

The architectural division is gradually taking charge of work. Two buildings of last year's list were assigned to it and more will be given on the 1910 list. It is too early to speak definitely of the success of this venture, but the Board believes it to be in line with the proved engineering work.

V.

GENERAL DEDUCTIONS.

The chief change noted this year has been reported in the "Revision of Standards of Cost to Agree with Reduced Size of Rooms." These and previous deductions reported in other years are summed up as follows:

All buildings are required to be fireproof up to and including the ceiling of the upper story. The cost is limited by allowing 28,000 cubic feet per class room as a maximum for schools of the lower elementary type and 22 cents per cubic foot; and 30,000 cubic feet per class room, with an allowance (of two class rooms for schools of medium size—that is about sixteen rooms—and four class rooms for schools of large size—over twenty-four rooms) to represent the added area of the assembly hall, and again 22 cents per cubic foot. For unusual expense in foundations 2 cents per cubic foot is allowed.

The Board has nothing to add to the general deductions about high school accommodation or equipment or cost per pupil. The two high schools now under construction, the Dorchester High and the Girls' High, are additions and give no definite information. The High School of Commerce is complicated with other problems. In general the Board still believes \$400 per pupil to be sufficient.

For the exterior, common red brick and stone. For the grounds outside the buildings, from 30 to 50 square feet per pupil, elementary buildings having about them paved spaces, experimental gardens, planted spaces and simple inclosures, preferably hedges. The square foot test for the floor plan remains and is found effective; the class room area on one floor multiplied by two should be the outside limit of the area of the floor. Buildings should be planned to give sunlight in every room at some time of the day. While the Board believes in unilateral lighting, it is better to have light from two sides than to have no sunlight. A room that has sunlight during all the school hours is not desirable.

The assembly hall should be placed as near the ground as possible. The grade of the first floor should be sufficiently above the grade outside to make it possible to have doors to the basement with steps down inside. The basement floor, especially in such rooms as are used for the work of cooking or manual training, should be kept as near the grade outside as is possible, to give reasonably high story, about 10 feet; with the boiler room having greater height and the floor at lower grade the main ducts in a fan system can be of masonry

below the general basement floor. The whole detail of requirements of the interior is given in the "General Information," Appendix VII, but in general, stairs and corridors are wholly fireproof, except for doors opening off them to the class rooms. Ideally these might well be changed to fireproof doors, but at present the expense seems greater than is warranted.

In class rooms it may be possible to substitute for the wooden floor, which gives constant trouble, a linoleum floor cemented to a concrete surface, but this means furniture that is not fastened to the floor. In cooking rooms and kindergartens it is certainly advisable.

The adjustable furniture, both desk and seat, is still in use, but under a contract with a new firm pressed steel is being used for standards instead of cast iron. If a movable chair could be used there would be little difficulty in arranging the desk so that it would stand firmly without being fixed and this would allow the use of the linoleum floor in class rooms.

VI.

FINANCIAL STATEMENT.

Last year a statement was made of all the items and balances to date in connection with the appropriations for land and buildings. This statement is here continued. Last year's statement reported in detail the six items of the list of 1907-08 and made an approximate estimated balance on the items for 1908-09.

This list is now taken up again for more detailed and final statement.

The list for 1908-09 was as follows:

	Pupils.
Item 1.— Edward Everett district, elementary school, upper grades	616
Item 2.— Brimmer district, elementary school, upper grades	1,760
Item 3.— Eliot district, administrative office	704
Item 4.— Blackinton district, elementary school, upper grades	528
Item 5.— Dudley district, elementary school, lower grades	420
Item 6.— Henry L. Pierce district, high school (Dor- chester High)	352
Item 7.— Longfellow district, elementary school, lower grades	

Item 1.—The Edward Everett district (Edward Everett School). The available amount was \$141,000. Expecting a balance of over \$5,000, the Board transferred \$5,000 to the Girls' High addition. This proved to be premature and there is a small deficit to be made good. The figures are as follows:

Amount available	\$141,000 00
Amount expended	\$136,645 26
Amount transferred	5,000 00
	<hr/>
	141,645 26
Deficit	<hr/> <u>\$645 26</u>

Item 2.—The Brimmer district (Abraham Lincoln School). The original appropriation, \$450,000, was known to be inadequate when it was set aside and now, with the land taken and largely paid for and the building under contract, the Board is able to state definitely the amount needed to complete this work. In the appropriation for 1909-10, \$58,000 will be included. It is estimated that the land will cost about \$164,000 and the building \$300,000, the commissions and furniture about \$40,000, making a total of \$504,000.

Appropriation (reduced)	\$440,000 00
Building (estimated)	\$300,000 00
Land (estimated)	164,000 00
Commission and incidentals	20,000 00
Furniture (estimated)	14,000 00
Additional appropriation to be made,	<hr/> 58,000 00
	<hr/> <u>\$498,000 00</u>
	<u>\$498,000 00</u>

Item 3.—Master's office, Eliot district, was reported last year as complete. The balance unappropriated is \$532.59.

Item 4, the Blackinton district (Bishop Cheverus School), is practically complete, except some final payments on furniture. This was reported last year as having an approximate balance of \$20,000. The Board transferred \$10,000 to the Girls' High in August, 1909. When this building was finally completed

by a joint vote of the School Committee and the Board of Schoolhouse Commissioners a transfer of a further balance, \$18,000, was made to the Mechanic Arts High School. On this item the Board made savings on the land, on the building and on the furniture, and completed the work far below the appropriation.

Appropriation	\$140,000 00
Appropriation for land	34,000 00
	<hr/>
Amount expended	\$145,088 86
Amount transferred to Girls' High addition	10,000 00
Amount transferred to Mechanic Arts High School	18,000 00
	<hr/>
Balance	\$911 14
	<hr/>

Item 5.—The Dudley district (Nathan Hale School). The appropriation for land and building was \$105,000. The Board had more than the \$10,000 balance anticipated and was able to transfer \$2,200 to the Phillips Brooks district for land and \$8,500 to the Mechanic Arts High School. There will be a small balance when the accounts are closed, as follows:

Appropriation	\$105,000 00
Amount expended	\$92,220 27
Amount transferred to Phillips Brooks district	2,200 00
Amount transferred to Mechanic Arts High School	8,500 00
	<hr/>
Balance	\$2,079 73
	<hr/>

Item 6.—The Dorchester High addition. The appropriation was increased to \$135,000 and is found still insufficient. The Board will probably ask the School Committee to make a small additional appropriation to complete this work, about \$4,500. The building is under contract and the estimated amounts are as follows:

Appropriation	\$135,000 00
Appropriation for land	17,500 00
	<hr/>
Amount expended	\$13,923 09
Amount to be expended, approximately	143,076 91
	<hr/>
Deficit	157,000 00
	<hr/>
	\$4,500 00

Item 7.—The addition to the Longfellow School was completed during the summer and, as anticipated, there is a slight deficit to be made good.

Appropriation	\$58,500 00
Appropriation for land	8,125 00
	<hr/>
Amount expended	\$66,625 00
	67,256 76
	<hr/>
Deficit	\$631 76
	<hr/>

The High School of Commerce comes under a special act and a special appropriation (chapter 446 of the Acts of 1909). The amount was not to exceed \$600,000. It seemed evident this summer when the land was taken and the plans for the building were blocked out that the amount would prove inadequate. It was necessarily very roughly estimated and without any definite information in regard to the location, and consequently in regard to the cost of the land. The School Committee, who drew up the bill, placed the amount necessary at too low a figure. The Board estimates the cost of land, building and equipment as follows, and authority will be required from the Legislature before contracts could be signed in excess of \$600,000:

Appropriation	\$600,000 00
Land	\$200,000 00
Building	\$400,000 00—425,000 00
Commission and incidentals	26,000 00
Equipment	24,000 00
	<hr/>
	\$675,000 00
	<hr/>
	\$600,000 00

The other item which should be reported upon in the financial statement is the special appropriation of \$115,000

that was made for fire protection. Last year the Board reported that all but about \$25,000 of this amount had been expended and on the 1st of February, 1909, there was a balance of \$5,175.69, which will be expended during the coming summer on work which is most imperative.

This completes the list for 1908 and gives the following summary:

SUMMARY.

Deficits to be cared for in the appropriation for land and buildings	\$63,777 02
Balance that may be transferred to other items by joint vote	<u>3,523 46</u>

VII.

CONCLUSION.

In conclusion the Board wishes to express to the superintendent its appreciation of the assistance that has been given to the Board by the committees, one on high schools and the other for elementary schools. The former, with Mr. Parmenter as chairman and Mr. Eliot and Mr. Lincoln, has been of very great service, not only in the comparatively simple problems of the additions to the Dorchester and Girls' High Schools but in the extremely complicated problem of the new High School of Commerce. This committee has been conscientious, careful and absolutely reliable in its study of the problems and in its advice. It was largely through the efforts of this committee that the accommodation of the Dorchester High Annex was increased in size, very much to the benefit of the school, and it is also largely due to the efforts of this committee that the size and equipment of the gymnasium for the Girls' High School was increased to make it adequate for so important a school.

The committee on elementary schools has been fortunate in retaining the services of Mr. William C. Crawford as chairman, and his work has been admirably supplemented by Mr. Hinds and Mr. Schuerch. This committee has advised in the most careful and painstaking way on the plans, arrangement and detail of equipment of all the elementary schools that have been studied this year. This includes the Abraham Lincoln, the Samuel Adams, the Lafayette, the William Lloyd Garrison and the George T. Angell. It is through the efforts of this committee that the previous suggestion

of the superintendent that all rooms should be limited to a size that would take forty-four pupils has been modified so as to give in each building a room of somewhat larger size which will accommodate a class of fifty, and which will give a space below or above it sufficient to take the cooking room, manual training room or kindergarten. It is difficult to overestimate the value of the work of these men, given so generously and so faithfully.

The Board wishes to take this opportunity to make its acknowledgements to the Public School Art League. This organization gave efficient help some years ago when the Board was trying to arrive at a practical and at the same time aesthetic use of color in class rooms and assembly halls. This work they have continued and have also carried on their most useful work of decorating individual rooms and assembly halls with photographs and casts. The work of this association has been done in a quiet but most effective way and the Board appreciates the value of this work and is grateful for it.

In acknowledging the assistance that the Board has received from outside sources it is impossible to omit mention of the service that has been given by the special committee of the Chamber of Commerce on the High School of Commerce problem. Mr. Fish, as chairman of this committee, has given constant attention to the subject and has given the assistance of his influence in the community in forwarding the work, and Messrs. Rothwell, Filene, McSweeney and Tuttle have all advised with the Board in regard to the building.

On all the work connected with new buildings the Board has, through these various sources, been in very close connection with the School Committee, its aims and ambitions, and the Board believes that there has been most perfect co-operation and accord. The Board regrets that there does not seem to have been such complete co-operation in the work of the School Committee which affects the old buildings. If the superintendent appoints a committee to represent him and to advise with the Board of Schoolhouse Commissioners on the construction of new buildings, it would seem to justify his appointing a committee to advise with the Board on so vital a subject as the reduction in the size of classes in the old buildings, and how, when and where it should be made applicable; or that he should appoint a committee on elementary industrial work, to consult with the Board and decide where and how rooms or buildings should be equipped for new ventures. If this new work were harmonious and correlated with such work as cooking and manual training,

which is already established, it would be possible for the School Committee to feel sure that, when they voted the establishment of a cooking room in this district or a class in industrial work in that, the Board of Schoolhouse Commissioners had already been consulted and had given their consideration to the matter and decided how to carry out the work, and that the appropriation that is necessary had been set aside for it. Until this is done it is inevitable that the School Committee should occasionally undertake work which the Board cannot, on account of financial disability, support.

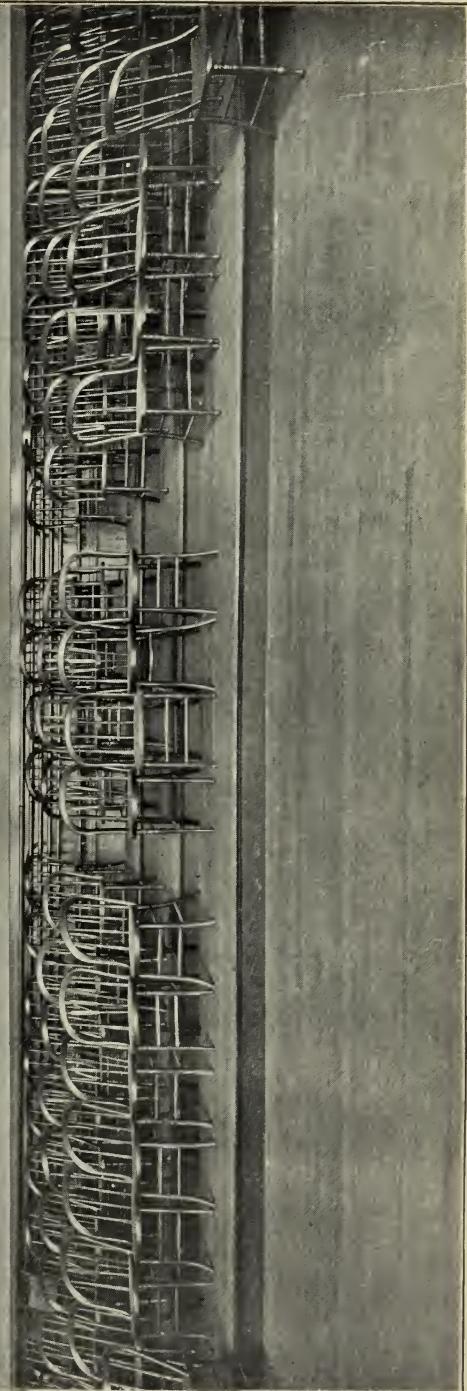
Two new firms of architects have been added to the list of those who have worked for us and they, like all their predecessors, have furnished valuable information and assistance in perfecting the plans and specifications for the school work. To all these the thanks of the Board are due.

Respectfully submitted,

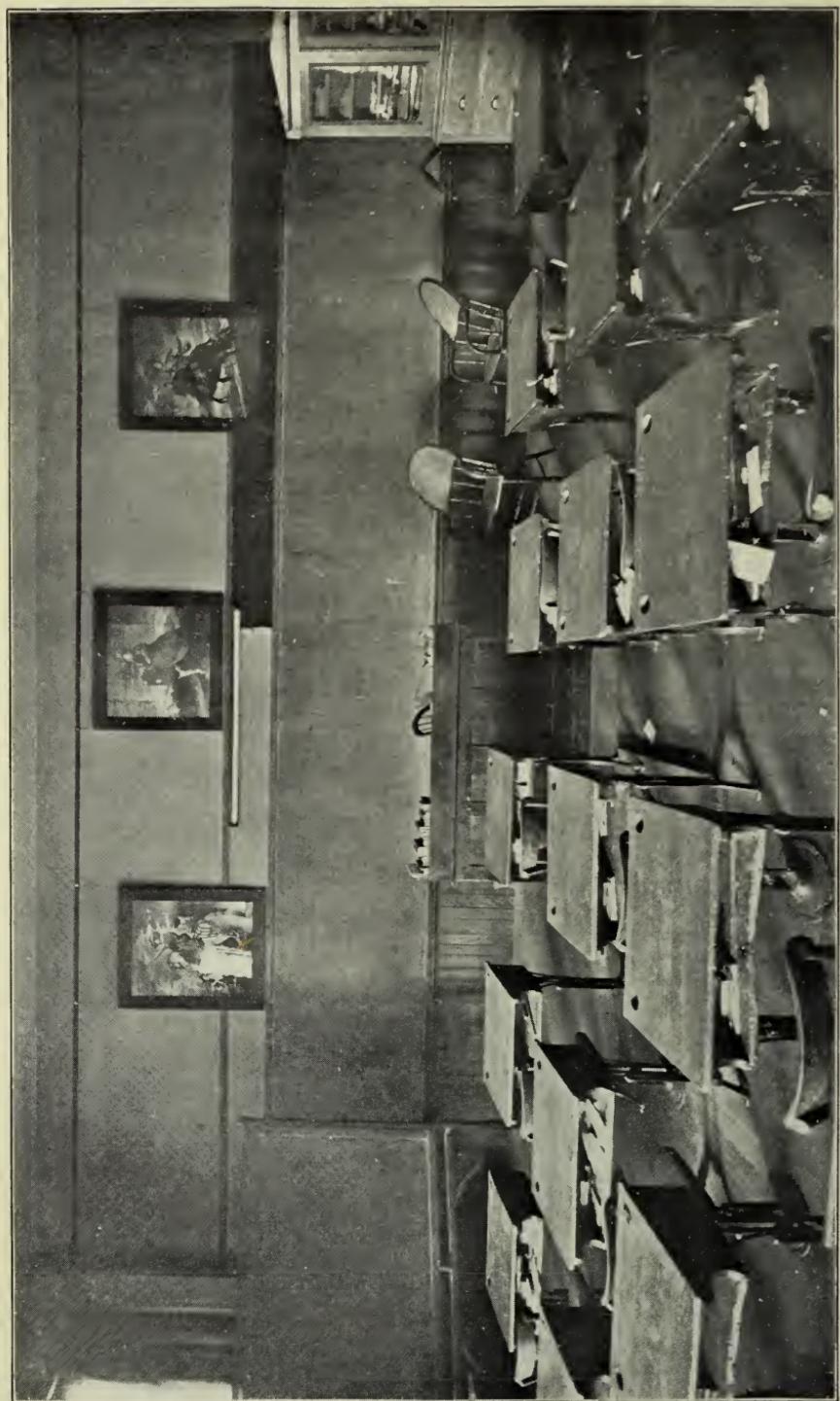
R. CLIPSTON STURGIS,
THOMAS LEAVITT,
EDWARD R. GREGORY.

SOME OF THE CASTS IN HALL, RICE SCHOOL, DARTMOUTH STREET.

Presented by Boston School Art League.



PICTURES IN ROOM 9, RICE SCHOOL, DARTMOUTH STREET.
Presented by BOSTON ART LEAGUE.



APPENDICES.

APPENDIX I.

APPROPRIATION FOR LAND AND BUILDINGS FOR SCHOOLS.

I.

GENERAL STATEMENT.

The following statement shows the expenditures on account of above appropriation from February 1, 1909, to February 1, 1910.

February 1, 1909, balance of appropriation	<u>\$1,827,558 58</u>
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EXPENDITURES.

Expended for sites, erection, completion and furnishing of new buildings and the grading and planting of lots:

Extension Mechanic Arts High School.

Building	\$85,372 02
Furnishing	20,148 45
	<u> </u>
	\$105,520 47

Elementary School, Blackinton District, Bishop Cheverus School.

Building	\$95,780 26
Furnishing	2,869 92
	<u> </u>
	98,650 18

Elementary School, Winthrop-Brimmer District, Abraham Lincoln School.

Site	\$75,557 16
Building	6,161 40
	<u> </u>
	81,718 56

Elementary School, Dudley District, Nathan Hale School.

Building	\$66,828 33
Furnishing	2,668 19
	<u> </u>
	69,496 52

<i>Carried forward</i>	<u>\$355,385 73</u>
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<i>Brought forward</i>	\$355,385 73
<i>Elementary School, Phillips District, Peter Faneuil School.</i>	
Site	\$9,189 00
Building	60,021 45
	<hr/>
	69,210 45
<i>Grammar School, Edward Everett District, Edward Everett School.</i>	
Site	\$1,748 00
Building	55,707 97
Furnishings	5,130 11
	<hr/>
	62,586 08
<i>Elementary School, Longfellow District, Longfellow School.</i>	
Building	\$56,859 76
Furnishings	1,620 29
	<hr/>
	58,480 05
<i>Elementary Schools, Sherwin District, Lafayette School, George T. Angell School.</i>	
Sites	\$48,058 13
Buildings	467 33
	<hr/>
	48,525 46
<i>Day Industrial School for Girls.</i>	
Site	\$35,081 71
Building	4,481 36
Furnishings	868 22
	<hr/>
	40,431 29
<i>Elementary School, Lewis District, William Lloyd Garrison School.</i>	
Site	\$15,798 65
	<hr/>
	15,798 65
<i>Addition, Roxbury High School.</i>	
Site	\$17,347 50
	<hr/>
	17,347 50
<i>Addition, Dorchester High School.</i>	
Building	\$12,565 54
	<hr/>
	12,565 54
<i>Carried forward</i>	\$680,330 75

SCHOOLHOUSE DEPARTMENT.

45

<i>Brought forward</i>	.	.	.	.	.	\$680,330 75
<i>Elementary School, Adams District, Samuel Adams School.</i>						
Site	.	.	.	.	.	\$13,025 38
Building	.	.	.	.	.	91 63
						<hr/>
						13,117 01

Addition, Girls' High School.

Building	.	.	.	.	.	\$7,601 20
Furnishings	.	.	.	.	.	1,200 00
						<hr/>
						8,801 20

Normal and Latin Group.

Site	.	.	.	.	.	\$3,721 05
Building	.	.	.	.	.	79 55
Furnishings	.	.	.	.	.	406 99
						<hr/>
						4,207 59

Extension Francis Parkman School.

Site	.	.	.	.	.	\$3,576 65
Building	.	.	.	.	.	456 90
Furnishings	.	.	.	.	.	61 49
						<hr/>
						4,095 04

Elementary School, Robert G. Shaw District, Germantown.

Site	.	.	.	.	.	\$2,511 73
						<hr/>

Enlargement of Yard, Phillips Brooks School.

Site	.	.	.	.	.	\$2,125 00
						<hr/>

Charlestown High School.

Site	.	.	.	.	.	\$280 00
						<hr/>

Elementary School, Adams District, Plummer School.

Building	.	.	.	.	.	\$154 78
Furnishing	.	.	.	.	.	10 20
						<hr/>
						164 98

Sanitation.

Painting latrines, miscellaneous schools	\$189 38
						<hr/>

<i>Carried forward</i>	\$715,822 68
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<i>Brought forward</i>	<i>\$715,822 68</i>
<i>Fire Protection.</i>	
Fire alarm installation	\$26,304 57
Fire protection	10,467 06
Fire escapes	8,337 86
Fire hose and extinguishers	215 75
	<hr/>
	45,325 24
<i>Miscellaneous.</i>	
Engineering expenses	\$397 24
Incidental expenses, including salaries of employees, rental of offices, blue printing, engineering and architectural supplies, stationery, photographic supplies, etc.	33,002 89
	<hr/>
	33,400 13
Total expenditures	\$794,548 05
Amount voted and set aside, but not expended to date by Schoolhouse Commission, for sites, construction and furnishing of new buildings, incidental and engineering expenses, fire protection	\$1,025,355 58
Balance undistributed	7,654 95
	<hr/>
	1,033,010 53
	<hr/>
	\$1,827,558 58

II.**SUBDIVISION OF EXPENDITURES.**

Elementary schools	\$526,479 71
High schools	189,153 59
Fire protection	45,325 24
Miscellaneous expenses	33,589 51
	<hr/>
	\$794,548 05

III.**Statement of Income, Land and Buildings for Schools.**

Amount received from sale of old buildings, rents, etc.	\$3,331 45
Total	<hr/> <hr/> \$3,331 45

APPENDIX II.

APPROPRIATION FOR REPAIR AND ALTERATION WORK, NEW EQUIPMENT, FURNITURE (NEW AND REPAIRS TO OLD), RENTS AND TAXES, AND EXPENSES OF THE COMMISSION.

I.

GENERAL STATEMENT.

During the year February 1, 1909, to February 1, 1910, the following sums were expended by the Schoolhouse Department for repair and alteration work, new equipment, furniture (new and repairs to old), rents and taxes, and expenses of the commission:

February 1, 1909, appropriation	<u>\$342,975 30</u>
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*Repairs and Equipment.**Carpentry:*

Repairs	\$53,333 74
New floors	5,125 43
Flagstaffs	1,103 35
Locksmithing	1,413 22
Hardware	159 21

Furniture:

New	20,541 57
Repairs	8,781 03
New curtains	1,433 92
Curtain repairs	787 22
New clocks	212 00
Clock repairs	829 35
Gymnasium apparatus	332 47

Blackboards:

New	4,611 51
Repairs	2,501 65

Plumbing:

Repairs and installing, new	18,063 20
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<i>Carried forward</i>	<i>\$119,228 87</i>
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<i>Brought forward</i>	\$119,228	87
<i>Roofing:</i>			
Repairs and installing, new	18,726	22
<i>Painting:</i>			
Painting and whitening	. . . .	18,982	36
Glazing	. . . .	3,308	90
<i>Heating:</i>			
Repairs	. . . .	53,409	60
Ventilation	. . . .	830	06
Motors and engines	. . . .	582	66
Care of thermostats	. . . .	679	66
<i>Masonry:</i>			
Repairs	. . . .	30,927	08
Grading	. . . .	187	68
Planting	. . . .	1,468	51
<i>Electrical:</i>			
Electric light installation	. . . .	13,730	57
Electric light maintenance	. . . .	1,064	83
Electric bells and telephone installation	. . . .	3,747	77
Electric bells and telephone maintenance	. . . .	2,835	31
Electric clock installation	. . . .	88	00
Electric clock maintenance	. . . .	1,735	06
Gas appliance installation	. . . .	1,285	32
Gas appliance maintenance	. . . .	1,001	39
Fire alarm maintenance	. . . .	1,210	52
<i>Miscellaneous:</i>			
Iron and wire work	. . . .	2,286	38
Janitors' supplies	. . . .	653	66
Care and cleaning	. . . .	1,345	47
Advertising	. . . .	785	65
Teaming	. . . .	1,297	50
Rubber treads and matting	. . . .	357	43
Gypsy moths	. . . .	1,196	93
Architects' services	. . . .	100	55
Asphalt	. . . .	80	00
Cleaning vaults	. . . .	25	00
<i>Administration Expenses.</i>			
Salaries, commissioners and clerks,	. . . .	12,886	13
Salaries, inspectors	. . . .	17,863	15
Rent of offices	. . . .	2,232	50
<i>Carried forward</i>	. . . .	\$316,140	72

<i>Brought forward</i>	. . . .	\$316,140 72
Electric lighting of offices	. . . .	349 01
Care of office	. . . .	307 00
Postage	. . . .	446 00
Printing	. . . .	1,396 87
Stationery	. . . .	784 45
Telephone	. . . .	814 34
Messenger service	. . . .	26 39
Horse keeping	. . . .	1,032 81
Automobile expenses	. . . .	2,209 80
Furniture	. . . .	380 41
Car fares, traveling expenses	. . . .	1,300 37
Ice	. . . .	4 21
Boiler insurance	. . . .	54 78
Subscription	. . . .	111 00
Total repairs and administration expenses	. . . .	\$325,358 16

Hired Buildings, Rents and Taxes.

Barham Memorial Church	. . . .	\$105 00
Beech street lot	. . . .	125 00
Bennington street lot, East Boston	. . . .	240 00
Bennington street (Baker Con- gregational Church)	. . . .	300 00
Blue Hill avenue, 295	. . . .	46 67
Blue Hill avenue, 301	. . . .	104 00
Bunker Hill street, 238	. . . .	41 00
Centre street lot, Dorchester	. . . .	200 00
Chambers street, 27, West End	. . . .	842 04
Chambers street, 38 (St. Andrew's Chapel)	. . . .	1,080 00
Chambers street, 103	. . . .	1,636 00
Chelsea street, 18	. . . .	67 33
Church street, 30	. . . .	153 60
Columbus avenue, 1446	. . . .	320 00
Columbus avenue, 1448 (All Saints' Hall)	. . . .	2,400 00
Dudley street, 511-515	. . . .	200 00
East Fourth street, 484, South Boston	. . . .	613 00
Eliot street, Jamaica Plain (Trus- tees' Building)	. . . .	300 00
Franklin Union	. . . .	227 50
Hewlett street, 17, Roslindale	. . . .	140 00
Lauriat avenue, 170, Dorchester	. . . .	1,200 00
Louise park, 4	. . . .	138 00
<i>Carried forward</i>	. . . .	\$10,479 14
		\$325,358 16

<i>Brought forward</i>	. . . . .	\$10,479 14	\$325,358 16
Mechanics Building, Huntington avenue	. . . . .	2,500 00	
Saratoga street, 399, East Boston,	. . . . .	300 00	
Terrace street, 29	. . . . .	225 00	
Tremont street, 168	. . . . .	1,350 00	
Unitarian Church, Roslindale	. . . . .	350 00	
Warrenton street, 63 and 63A, city proper	. . . . .	1,213 00	
Washington street, 1008, city proper, in rear	. . . . .	1,200 00	
Total rents and taxes	. . . . .		17,617 14
Grand total	. . . . .		<u>\$342,975 30</u>

II.

SUBDIVISION OF EXPENDITURES.

Elementary schools	. . . . .	\$254,193 11
Administration and incidental expenses	. . . . .	50,155 63
High schools	. . . . .	35,869 05
School Committee Building	. . . . .	2,757 51
		<u>\$342,975 30</u>

III.

SUBDIVISION AS TO SCHOOLS.

Aaron Davis	. . . . .	\$470 92
Abby W. May	. . . . .	449 54
Aberdeen	. . . . .	480 10
Adams and Chestnut Streets	. . . . .	1,871 65
Adams Street	. . . . .	119 66
Agassiz	. . . . .	2,172 92
Albert Palmer	. . . . .	236 10
Andrews	. . . . .	352 01
Appleton Street	. . . . .	1,061 84
Asa Gray	. . . . .	576 54
Atherton	. . . . .	408 21
Auburn	. . . . .	221 00
Austin	. . . . .	244 09
Bailey Street	. . . . .	456 99
Baldwin	. . . . .	201 24
Bartlett Street	. . . . .	158 77
B. F. Tweed	. . . . .	294 07
Benjamin Cushing	. . . . .	251 77
<i>Carried forward</i>	. . . . .	\$10,027 42

<i>Brought forward</i>	.	.	.	.	.	\$10,027	42
Benjamin Dean	.	.	.	.	.	260	61
Benjamin Pope	.	.	.	.	.	302	15
Bennett	.	.	.	.	.	3,133	22
Bennett Branch	.	.	.	.	.	609	54
Bigelow	.	.	.	.	.	827	62
Bishop Cheverus	.	.	.	.	.	58	19
Blackinton	.	.	.	.	.	419	12
Bowditch	.	.	.	.	.	1,468	98
Bowdoin	.	.	.	.	.	1,519	31
Brewster	.	.	.	.	.	647	64
Brewster Annex	.	.	.	.	.	660	26
Brighton High	.	.	.	.	.	1,465	46
Brimmer	.	.	.	.	.	596	51
Bunker Hill Grammar	.	.	.	.	.	5,225	72
Bunker Hill Primary	.	.	.	.	.	364	41
Canterbury Street	.	.	.	.	.	139	61
Capen	.	.	.	.	.	247	34
Chapman	.	.	.	.	.	1,603	90
Charles C. Perkins	.	.	.	.	.	398	92
Charles Sumner	.	.	.	.	.	1,236	78
Charlestown High	.	.	.	.	.	1,027	09
Chestnut Avenue	.	.	.	.	.	296	73
Choate Burnham	.	.	.	.	.	182	03
Christopher Columbus	.	.	.	.	.	363	62
Christopher Gibson	.	.	.	.	.	1,032	71
Clinch	.	.	.	.	.	404	50
Comins	.	.	.	.	.	683	99
Commercial High	.	.	.	.	.	756	36
Common Street	.	.	.	.	.	445	24
Cook	.	.	.	.	.	493	26
Copley	.	.	.	.	.	389	92
Cottage Place	.	.	.	.	.	348	60
Cudworth	.	.	.	.	.	918	03
Cushman	.	.	.	.	.	936	15
Cyrus Alger	.	.	.	.	.	912	32
Dearborn	.	.	.	.	.	628	08
Dillaway	.	.	.	.	.	5,909	70
Dorchester Avenue	.	.	.	.	.	446	22
Dorchester High	.	.	.	.	.	2,834	91
Drake	.	.	.	.	.	1,832	70
Dudley	.	.	.	.	.	1,824	00
Dwight	.	.	.	.	.	5,007	87
East Boston High	.	.	.	.	.	2,373	67
Edward Everett	.	.	.	.	.	37	14
Elbridge Smith	.	.	.	.	.	421	31
Eliot	.	.	.	.	.	879	85
Ellis Mendell	.	.	.	.	.	292	44
<i>Carried forward</i>	.	.	.	.	.	\$62,891	15

<i>Brought forward</i>	.	.	.	.	.	\$62,891	15
Emerson Primary	.	.	.	.	.	521	57
Emerson Grammar	.	.	.	.	.	1,247	74
English High	.	.	.	.	.	3,652	55
Everett Grammar	.	.	.	.	.	1,458	64
Everett Primary	.	.	.	.	.	158	15
Farragut	.	.	.	.	.	952	05
Florence Street	.	.	.	.	.	253	63
Franklin	.	.	.	.	.	2,426	35
Francis Parkman	.	.	.	.	.	457	93
Frederick W. Lincoln	.	.	.	.	.	3,145	69
Frederic A. Whitney	.	.	.	.	.	3,873	99
Freeman	.	.	.	.	.	100	61
Frothingham	.	.	.	.	.	3,310	77
Frothingham Annex	.	.	.	.	.	58	84
Gaston	.	.	.	.	.	876	68
George Putnam	.	.	.	.	.	3,713	70
George Street	.	.	.	.	.	213	87
Gilbert Stuart	.	.	.	.	.	1,587	25
Girl's High	.	.	.	.	.	1,897	38
Girl's Latin	.	.	.	.	.	949	69
Glenway	.	.	.	.	.	292	27
Glenway Annex	.	.	.	.	.	102	55
Grant	.	.	.	.	.	221	73
Hancock	.	.	.	.	.	1,371	48
Hancock Annex	.	.	.	.	.	155	13
Harbor View Street	.	.	.	.	.	348	25
Harris	.	.	.	.	.	380	83
Harvard Grammar	.	.	.	.	.	1,239	93
Harvard Primary, Brighton	.	.	.	.	.	374	83
Harvard Hill	.	.	.	.	.	397	42
Hawes Hall	.	.	.	.	.	316	39
Heath Street	.	.	.	.	.	109	78
Henry L. Pierce	.	.	.	.	.	791	64
Henry Vane	.	.	.	.	.	348	28
Hillside	.	.	.	.	.	1,274	65
Hobart Street	.	.	.	.	.	807	97
Horace Mann	.	.	.	.	.	909	86
Howard Avenue	.	.	.	.	.	128	05
Howard Avenue Annex	.	.	.	.	.	19	00
Hugh O'Brien	.	.	.	.	.	3,268	61
Hugh O'Brien Annex	.	.	.	.	.	25	75
Hull	.	.	.	.	.	965	74
Hyde	.	.	.	.	.	2,412	94
Ira Allen	.	.	.	.	.	502	62
James Otis	.	.	.	.	.	390	88
Jefferson	.	.	.	.	.	522	45
John A. Andrew	.	.	.	.	.	702	74
<i>Carried forward</i>	.	.	.	.	.	\$112,130	00

<i>Brought forward</i>	.	.	.	.	.	\$112,130	00
John Barry	.	.	.	.	.	1,412	05
John Boyle O'Reilly	.	.	.	.	.	297	91
John G. Whittier	.	.	.	.	.	538	10
Joseph Tuckerman	.	.	.	.	.	211	87
Joshua Bates	.	.	.	.	.	428	19
Kenilworth Street	.	.	.	.	.	615	07
Lawrence	.	.	.	.	.	1,078	65
Lewis	.	.	.	.	.	942	95
Lewis Annex	.	.	.	.	.	47	00
Little Em'ly	.	.	.	.	.	22	50
Longfellow	.	.	.	.	.	553	09
Lowell	.	.	.	.	.	1,214	41
Lowell Annex	.	.	.	.	.	212	40
Lucretia Crocker	.	.	.	.	.	1,014	17
Lyceum Hall	.	.	.	.	.	4,775	47
Lyman	.	.	.	.	.	1,621	14
Margaret Fuller	.	.	.	.	.	204	31
Marshall	.	.	.	.	.	461	91
Martin	.	.	.	.	.	3,980	70
Mary Hemenway	.	.	.	.	.	1,236	24
Mather	.	.	.	.	.	1,121	66
Mayflower	.	.	.	.	.	8	00
Mayhew	.	.	.	.	.	747	58
Mead Street	.	.	.	.	.	440	98
Mechanic Arts High	.	.	.	.	.	923	40
Medford Street	.	.	.	.	.	1,044	93
Minot	.	.	.	.	.	403	99
Mt. Pleasant Avenue	.	.	.	.	.	49	65
Mt. Vernon Street	.	.	.	.	.	451	60
Miles Standish	.	.	.	.	.	1,330	74
Nathan Hale	.	.	.	.	.	87	00
Nathaniel Hawthorne	.	.	.	.	.	137	05
Noble	.	.	.	.	.	403	33
Noble Annex	.	.	.	.	.	16	75
Norcross	.	.	.	.	.	1,272	39
Normal	.	.	.	.	.	1,094	49
North Margin Street	.	.	.	.	.	136	03
Oak Square	.	.	.	.	.	362	26
Old Agassiz	.	.	.	.	.	280	25
Old Baker Street	.	.	.	.	.	131	18
Old Brighton High	.	.	.	.	.	64	65
Old Dearborn	.	.	.	.	.	698	26
Old East Boston High	.	.	.	.	.	483	97
Old Edward Everett	.	.	.	.	.	280	04
Old Gibson	.	.	.	.	.	183	15
Old Ira Allen	.	.	.	.	.	163	13
Old Mather	.	.	.	.	.	1,030	53
<i>Carried forward</i>	.	.	.	.	.	\$146,345	12

<i>Brought forward</i>	.	.	.	.	.	\$146,345	12
Old Parkman	.	.	.	.	.	548	59
Oliver Hazard Perry	.	.	.	.	.	1,001	17
Oliver Wendell Holmes	.	.	.	.	.	437	22
Parkman	.	.	.	.	.	1,049	06
Paul Jones	.	.	.	.	.	1,629	89
Paul Revere	.	.	.	.	.	1,290	41
Phillips Brooks	.	.	.	.	.	964	96
Phillips Street	.	.	.	.	.	159	20
Phineas Bates	.	.	.	.	.	667	73
Pierpont	.	.	.	.	.	9,618	66
Plummer	.	.	.	.	.	761	54
Polk Street	.	.	.	.	.	350	98
Pormort	.	.	.	.	.	1,530	21
Prescott	.	.	.	.	.	1,316	20
Prescott Annex	.	.	.	.	.	37	92
Prince	.	.	.	.	.	4,829	85
Public Latin	.	.	.	.	.	2,296	39
Quincy	.	.	.	.	.	4,533	56
Quincy, Manual Training	.	.	.	.	.	47	55
Quincy Street	.	.	.	.	.	394	25
Rice Training	.	.	.	.	.	2,748	64
Robert Swan	.	.	.	.	.	1,005	85
Robert G. Shaw	.	.	.	.	.	1,211	07
Roger Clap	.	.	.	.	.	706	13
Roger Wolcott	.	.	.	.	.	1,722	05
Roxbury High	.	.	.	.	.	1,471	25
Roxbury High Annex	.	.	.	.	.	317	50
Rutland Street	.	.	.	.	.	304	31
Samuel G. Howe	.	.	.	.	.	496	78
Samuel W. Mason	.	.	.	.	.	431	20
Sarah J. Baker	.	.	.	.	.	4,330	98
Savin Hill	.	.	.	.	.	50	90
Savin Hill Avenue, No. 141	.	.	.	.	.	65	58
School Street	.	.	.	.	.	72	29
Sharp	.	.	.	.	.	273	73
Sherwin	.	.	.	.	.	716	10
Shurtleff	.	.	.	.	.	700	17
Simonds	.	.	.	.	.	117	02
Skinner	.	.	.	.	.	484	33
Smith Street	.	.	.	.	.	65	33
Somerset Street	.	.	.	.	.	784	33
South Boston High	.	.	.	.	.	2,150	92
Stephen Decatur	.	.	.	.	.	823	06
Stephen M. Weld	.	.	.	.	.	181	86
Stoughton	.	.	.	.	.	196	22
Tappan	.	.	.	.	.	324	61
Thomas Gardner	.	.	.	.	.	1,261	27
<i>Carried forward</i>	.	.	.	.	.	\$202,823	94

<i>Brought forward</i>	.	.	.	.	.	\$202,823	94
Thomas N. Hart	.	.	.	.	.	2,655	44
Thornton Street	.	.	.	.	.	467	57
Tileston	.	.	.	.	.	383	05
Tuberculosis School	.	.	.	.	.	1,686	06
Tyler Street	.	.	.	.	.	394	45
Union Street	.	.	.	.	.	12	50
Wait	.	.	.	.	.	1,839	98
Walnut Street	.	.	.	.	.	313	75
Warren	.	.	.	.	.	9,136	37
Washington	.	.	.	.	.	2,129	28
Washington Allston	.	.	.	.	.	1,067	13
Washington Allston Annex	.	.	.	.	.	181	16
Washington Street (Forest Hills)	.	.	.	.	.	257	43
Washington Street (Germantown)	.	.	.	.	.	405	30
Way Street	.	.	.	.	.	179	04
Wells	.	.	.	.	.	2,968	92
Wendell Phillips	.	.	.	.	.	2,333	68
West Concord Street	.	.	.	.	.	616	00
West Roxbury High	.	.	.	.	.	1,336	78
William Bacon	.	.	.	.	.	586	44
William E. Endicott	.	.	.	.	.	137	93
William E. Russell	.	.	.	.	.	564	97
William H. Kent	.	.	.	.	.	244	49
William Wirt Warren	.	.	.	.	.	688	15
Williams	.	.	.	.	.	168	68
Winchell	.	.	.	.	.	623	67
Winship	.	.	.	.	.	503	50
Winthrop	.	.	.	.	.	1,102	70
Winthrop Street	.	.	.	.	.	828	49
W. L. P. Boardman	.	.	.	.	.	281	88
Wyman	.	.	.	.	.	963	60
Administration and incidental expenses	.	.	.	.	.	50,155	63
Portable buildings (111)	.	.	.	.	.	29,153	86
School Committee Building	.	.	.	.	.	2,757	51
Kindergarten, No. 12 Carver street	.	.	.	.	.	167	76
Dennison House	.	.	.	.	.	8	08
Kindergarten, Ruggles street	.	.	.	.	.	39	73

Hired Buildings, Rents, Taxes and Repairs.

Barham Memorial Church	.	.	.	.	.	162	19
Beech street lot, Roslindale	.	.	.	.	.	125	00
Bennington street lot, East Boston	.	.	.	.	.	240	00
Bennington street (Baker Congregational Church),	.	.	.	.	.	312	29
Blue Hill avenue, 295	.	.	.	.	.	186	37
Blue Hill avenue, 301	.	.	.	.	.	127	67
Bowker Building	.	.	.	.	.	989	32

Carried forward \$322,307 74

<i>Brought forward</i>	.	.	.	.	.	.	\$322,307	74
Bunker Hill street, 235	.	.	.	.	.	.	107	04
Chambers street, No. 27	.	.	.	.	.	.	879	21
Chambers street, No. 38 (St. Andrew's Chapel)	.	.	.	.	.	.	1,101	82
Chambers street, No. 103	.	.	.	.	.	.	1,661	71
Chelsea street, 18	.	.	.	.	.	.	116	83
Church street, No. 30	.	.	.	.	.	.	163	60
Centre street lot, Dorchester	.	.	.	.	.	.	200	00
Columbus avenue, No. 1446	.	.	.	.	.	.	480	09
Columbus avenue, No. 1448 (All Saints' Hall)	.	.	.	.	.	.	2,478	13
Dudley street, 511-515	.	.	.	.	.	.	299	95
East Fourth street, No. 448	.	.	.	.	.	.	711	22
Eliot street, Jamaica Plain (Trustees Building)	.	.	.	.	.	.	300	00
Franklin Union	.	.	.	.	.	.	227	50
Hewlett street, No. 17	.	.	.	.	.	.	195	00
Lauriat avenue, No. 170	.	.	.	.	.	.	1,239	00
Louise park, 4	.	.	.	.	.	.	138	00
Mechanics building	.	.	.	.	.	.	3,500	70
Parmenter street, No. 20	.	.	.	.	.	.	102	35
South Russell street, 26	.	.	.	.	.	.	20	32
Saratoga street, No. 399	.	.	.	.	.	.	327	95
South street (Roslindale Unitarian Church)	.	.	.	.	.	.	355	40
Terrace street, 29	.	.	.	.	.	.	1,516	48
Trémont street, 168	.	.	.	.	.	.	1,652	68
Warrenton street, No. 63A	.	.	.	.	.	.	1,442	71
Washington street, 1008 (Boston Female Asylum),	.	.	.	.	.	.	1,449	87
Total	.	.	.	.	.	.	\$342,975	30

IV.

STATEMENT OF INCOME.

Received from sale of old furniture, etc.	.	.	\$643	38
Total	.	.	\$643	38

APPENDIX III.

HIRED BUILDINGS.

I.

Rooms in the following buildings have been hired for school purposes; rents, taxes, water rates, heating, lighting and janitors' expenses paid for the same, amounting to \$17,617.14 during the year from February 1, 1909, to February 1, 1910.

For	Location.	Remarks.
Blackinton District, Primary Class.*	Bennington street, Baker Congregational Church.	Rent per annum \$600, from Oct. 19, 1908, including heat and janitor's service.
Blackinton District *.....	Bennington street, for Portable Building, 51.	Rent per annum \$240, for use of land only.
Bunker Hill District	Bunker Hill street, 238, store.	Rent per annum \$360, from Nov. 20, 1909. City to furnish heat and janitor's service.
Comins District, Primary Class ..	1446 Columbus avenue....	Rent per annum \$240, from Sept. 10, 1908, not including heat and janitor's service.
Comins District	1446 Columbus avenue....	Rent per annum \$240, from Sept. 1, 1909. City to pay water rates.
Comins District, Kindergarten and Primary Classes.	Germania Hall, Columbus avenue, 1448.	Rent per annum \$2,400, including heat and janitor's service.
Comins District	Terrace street, 29, house ..	Rent per annum \$600, from Aug. 16, 1909. City to furnish heat and janitor's service.
Dorchester High School	Centre street, Dorchester, for Portable Buildings, 10, 31 and 33.	Rent per annum \$200, for use of land only.
Emerson District, Primary Class,	Saratoga street, 399.....	Rent per annum \$300, not including heat or janitor's service.
Franklin District, Primary Classes.	Asylum Building, Washington street, 1008.	Rent per annum \$1,200. City to furnish fuel.
Girls' High School of Practical Arts, Domestic Science.*	Church street, No. 30.....	Rent per annum \$216, from Sept. 16, 1908, not including heat and janitor's service.
Girls' High School	Franklin Union, Berkeley and Appleton streets.	Rent per annum \$780, from Sept. 15, 1909, including heat and janitor's service.
High School of Practical Arts ...	Louise Park, 4, Roxbury flat.	Rent per annum \$276, from July 15, 1909. City to furnish heat and janitor's service.

* Vacated during the year.

HIRED BUILDINGS.—*Concluded.*

For	Location.	Remarks.
High School of Commerce.....	Massachusetts Charitable Mechanics Association, Mechanics Building.	Rent per annum \$6,000, from Aug. 1, 1909, including heat. City to pay water rates.
Hugh O'Brien District.....	Dudley street, 511-515.....	Rent per annum \$600, from Sept. 1, 1909. City to furnish heat and janitor's service.
John A. Andrew District	Barham Mermorial Church, corner Dorchester and Vinton streets, South Boston.	Rent per annum \$600, from Oct. 28, 1909, including heat and janitor's service.
Longfellow District, Primary Classes. Longfellow District, Primary Class.*	Beach street, Phineas Bates Portable Building, 12. Hewlett street, 17.....	Rent per annum \$125, for use of land only. Rent per annum \$240, not including heat or janitor's service.
Longfellow District, Kindergarten Class.*	Unitarian Church, Roslindale.	Rent per annum \$600, including heat and janitor's service.
Manual Training School.....	Eliot street, Jamaica Plain.	Rent per annum \$300, including heat and janitor's service.
Phillips Brooks District	Blue Hill avenue, 295, store,	Rent per annum \$300, from Nov. 5, 1909. School Committee to furnish heat and janitor's service.
Phillips Brooks District.....	Blue Hill avenue, 301, flat..	Rent per annum \$360 and water rates. City to pay for heat and janitor's service.
Prescott District.....	Chelsea street. 18.....	Rent per annum \$240, from Sept. 20, 1909, including heat and janitor's service.
Roger Wolcott District, Kindergarten and Primary Class.	Lauriat avenue, 170, Dorchester.	Rent per annum \$1,200, including heat, water and janitor's service.
Shurtliff District, Kindergarten and Cooking Room.	East Fourth street, 484, South Boston.	Rent per annum \$600, not including heat, water or janitor.
School Committee	Tremont street, 168, fifth floor.	Rent per annum \$1,620, from March 1, 1909, including heat. City to furnish janitor's service.
Washington District, Special and Ungraded Class.	Chambers street, 103.....	Rent per annum \$1,620, from Oct. 10, 1907, including heat and janitor's service.
Wells District Primary Class....	Chambers street, 27.....	Rent per annum \$800. City pays one-half cost of gas and water rates, also pays for janitor and heating.
Wells District, Kindergarten and Grammar Classes.	Chambers street, 38.....	Rent per annum \$1,080, including heat, janitor and water rates.
Winthrop District, Grammar Classes.	Warrenton street, 63-63A..	Rent per annum \$1,200. City pays water rates, heating and janitor.

* Vacated during the year.

II.

SUBDIVISION OF EXPENDITURES.

Amounts paid from appropriation for rents and taxes for each hired building during the year 1909-10:

Barham Memorial Church	\$105 00
Beech street lot	125 00
* Bennington street lot	240 00
* Bennington street (Baker Congregational Church)	300 00
Blue Hill avenue, 295	46 67
Blue Hill avenue, 301	104 00
Bunker Hill street	41 00
Centre street lot	200 00
Chambers street, 27	842 04
Chambers street, 38 (St. Andrew's Chapel)	1,080 00
Chambers street, 103.	1,636 00
Chelsea street, 18	67 33
* Church street, 30	153 60
Columbus avenue, 1446	320 00
Columbus avenue, 1448 (All Saints' Hall)	2,400 00
Dudley street, 511-515	200 00
East Fourth street, 484	613 00
Eliot street, Jamaica Plain (Trustees' Building)	300 00
Franklin Union	227 50
* Hewlett street, 17	140 00
Lauriat avenue, 170	1,200 00
Louise park, 4	138 00
Mechanics Building	2,500 00
Saratoga street, 399	300 00
Terrace street, 29	225 00
Tremont street, 168	1,350 00
* Unitarian Church, Roslindale	350 00
Warrenton street, 63 and 63A	1,213 00
Washington street, 1008, rear	1,200 00
	<hr/>
	\$17,617 14

* Vacated during the year

APPENDIX IV.

Table Showing Cost of Buildings, Cost per Cubic Foot, Children Accommodated and Cost per Pupil.

NAME OF SCHOOL BUILDING.	Grade.	Building, Heating, Plumbing and Electrical Contracts.	Total Cost of Building.	PERCENTAGE CONTRACTS BEAR TO TOTAL COST OF BUILDING.				CUBICAL CONTENTS.				PROPORTION CON- TRACTS BEAR TO COST PER CUBIC FOOT.				Children Accommodated per Pupil.			
				Bldg.	Heat.	Publ. b.	Elec.	Bldg.	Heat.	Publ. b.	Elec.	Cents	Cents	Cents	Cents				
Marshall.....	P.	B., \$106,516 H., 9,483 P., 5,197 E., 3,270	75 00 00 90	\$124,467	65	85	4	Per Ct.	Per Ct.	Per Ct.	Per Ct.	516,624	24	20	2	700	\$177 81		
William E. Russell....	G.	B., \$158,189 H., 15,132 P., 9,580 E., 5,622	52 40 29 35	188,524	56	84	8	5	3	3	3	\$94,941	21	17	2	1	50,000	900	209 47
60 Farragut.....	P.	B., \$127,262 H., 12,432 P., 6,821 E., 4,010	98 00 45 00	150,526	43	85	8	4	3	3	3	652,630	23	19	2	1	47,000	700	215 04
Paul Jones.....	P.	B., \$95,095 H., 10,376 P., 5,324 E., 3,574	75 00 00 60	114,370	35	83	9	5	3	3	3	510,386	22	18	2	1	36,000	700	163 39
Ellis Mendell.....	P.	B., \$103,569 H., 9,625 P., 5,658 E., 3,414	20 04 85 85	122,267	20	85	8	4	3	3	3	517,035	24	20	2	1	43,000	600	203 78
Jefferson.....	G.	B., \$182,261 H., 16,927 P., 6,449 E., 5,251	94 15 90 50	210,890	49	86	8	3	3	3	3	856,777	24	20	2	1	45,000	950	221 99
Washington.....	G.	B., \$263,661 H., 28,305 P., 21,417 E., 12,157	16 94 05 45	325,541	60	82	7	4	4	4	4	1,300,792	25	20	2	1	43,000	1,500	217 03

Christopher Columbus, P.	B., \$136,966 08 H., 16,244 00 P., 15,519 00 E., 4,783 00	173,512 08	79	9	9	3	727,068	23	18	2	2	1	30,000	1,200	144 59
John Boyle O'Reilly, P.	B., \$95,712 50 H., 10,227 00 P., 4,040 00 E., 2,859 50	112,839 00	S5	9	4	2	450,248	25	21	2	1	1	32,000	700	161 20
Oliver Hazard Perry, G.	B., \$118,497 38 H., 17,621 50 P., 5,094 00 E., 4,932 75	146,145 63	S1	12	4	3	612,351	24	19	3	1	1	44,000	700	208 78
Mather, G.	B., \$241,098 44 H., 27,807 00 P., 11,645 50 E., 8,782 05	289,332 99	S3	10	4	3	1,353,831	21	17	2	1	1	42,000	1,600	180 83
Thomas Gardner*, G.	B., \$113,769 15 H., 15,994 04 P., 6,038 00 E., 4,466 38	140,267 57	S1	12	4	3	735,573	19	15	2	1	1	52,000	700	200 38
Oliver Wendell Holmes, G.	B., \$159,563 85 H., 21,930 18 P., 8,037 00 E., 6,116 99	195,648 02	S1	12	4	3	991,609	20	16	2	1	1	41,000	1,200	163 04
Samuel W. Mason, P.	B., \$99,527 64 H., 10,447 00 P., 4,990 00 E., 3,360 00	118,324 64	S4	9	4	3	438,223	27	23	2	1	1	31,000	700	169 03
Dearborn, G.	B., \$182,240 82 H., 20,874 00 P., 8,929 50 E., 5,087 00	217,131 32	S4	9	4	3	980,100	22	18	2	1	1	47,000	1,050	206 66
John Greenleaf Whittier, P.	B., \$61,053 55 H., 7,540 70 P., 3,551 00 E., 2,590 90	74,736 15	S2	10	5	3	325,051	23	19	2	1	1	32,000	500	149 47
James Otis, P.	B., \$90,867 00 H., 8,767 00 P., 4,889 00 E., 3,295 00	107,818 00	S4	8	4	4	411,645	26	22	2	1	1	34,000	600	179 70

Table Showing Cost of Buildings, Cost per Cubic Foot, Children Accommodated and Cost per Pupil.—Concluded.

NAME OF SCHOOL BUILDING. Grade	Building, Heating, Plumbing and Electrical Contracts.	Total Cost of Building.	PERCENTAGE CONTRACTS BEAR TO TOTAL COST OF BUILDING.						CUBIC FEET OF CUBE CONTENTS.						PROPORTION CON- TRACTS BEAR TO COST PER CUBIC FOOT.						CHILDREN ACCOMMODATED. CLASS FEET, Etc.	COST PER PUPIL.		
			Heat.			P. H. D.			Heat.			P. H. D.			Heat.			P. H. D.						
			Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Per Ct.	Cost per Cu. ft.	Cubic feet.	Cubic feet.	Cost per Cu. ft.	Cubic feet.	Cubic feet.	Cost per Cu. ft.	Cubic feet.	Cubic feet.	Cost per Cu. ft.	Cubic feet.	Cubic feet.				
Tuckerman	P.	B., \$61,875 H., 8,422 P., 4,226 E., 2,898	79	79	79	25	25	25	\$77,423	25	25	25	330,171	23	18	3	1	1	1	33,000	500	\$154 85		
William E. Endicott	P.	B., \$64,745 H., 7,951 P., 3,667 E., 2,693	25	25	25	25	25	25	77	77	77	77	348,883	23	18	3	1	1	1	35,000	500	158 11		
Sarah J. Baker	P.	B., \$130,016 H., 18,673 P., 7,625 E., 4,880	23	23	23	23	23	23	79,057	77	77	77	702,384	23	18	3	1	1	1	29,069	1,200	134 32		
Nathaniel Hawthorne	P.	B., \$54,682 H., 7,518 P., 3,100 E., 2,611	82	82	82	25	25	25	161,194	23	23	23	281,305	24	19	3	1	1	1	31,000	450	150 92		
Charlestown High.	H.	B., \$253,157 H., 18,711 P., 13,970 E., 10,216	94	94	94	25	25	25	67,912	07	07	07	296,055	79	6	5	3	3	2	1	1	540	548 25	
NORMAL AND LATIN GROUP.																								
Common Building	H.	B., \$276,559 H., 26,338 P., 13,169 E., 13,169	15	15	15	48	48	48	329,237	08	08	08	329,237	08	84	4	4	4	1,392,848	23	19	2	1	
Girls' Latin	H.	B., \$249,577 H., 23,769 P., 11,884 E., 11,884	77	77	77	66	66	66	297,116	39	39	39	297,116	39	84	8	4	4	1,388,807	23	19	2	1	

Patrick A. Collins.....	G.	B., \$148,397 59	H., 14,133 10	P., 7,066 55	E., 7,066 55	176,663 79	84	8	4	4	725,561	23	19	2	1	1	43,000	850	207 84
Edward Everett.....	G.	B., \$82,838 43	H., 15,542 00	P., 4,665 00	E., 4,440 00	107,515 43	77	15	4	4	516,678	21	16	3	1	1	32,000	560	191 99
Nathan Hale.....	P.	B., \$54,599 35	H., 6,682 00	P., 3,397 47	E., 2,553 00	67,231 82	81	10	5	4	333,379	20	16	2	1	1	28,000	480	140 08
Bishop Cheverus.....	G.	B., \$80,268 04	H., 11,975 00	P., 5,040 31	E., 4,793 00	102,706 35	78	12	5	5	535,474	19	15	2	1	1	30,000	640	159 18
Peter Faneuil*.....	P.	B., \$89,749 25	H., 7,977 00	P., 4,437 00	E., 4,239 00	106,408 25	84	8	4	4	431,886	25	21	2	1	1	24,000	750	141 87
Dorchester High*.....	H.	B., \$106,666 00	H., 12,827 00	P., 5,709 00	E., 4,626 60	129,828 60	81	10	5	4	580,869	22	18	2	1	1	.....	700	185 47

* Cost to February 1, 1910.

1. Number of new buildings erected, 32	12. Total number of children accommodated, lower elementary.....	10,280
2. Total amount of building contracts, lower elementary.....	13. Total number of children accommodated, upper elementary.....	10,650
3. Total amount of building contracts, upper elementary.....	14. Total number of children accommodated, high.....	2,190
4. Total amount of building contracts, high schools.....	15. Total children accommodated.....	23,120
5. Total for new buildings.....	16. Accommodation of all elementary buildings previous to the Edward Everett School figured on the basis of 50 per room, although seating 56; buildings since figured on the basis of 40 per room, although seating 44.	
	17. Average cost per pupil, elementary schools.....	\$179.54
	18. Average cost per pupil, lower elementary schools.....	\$161.29
6. Contract, Extension Mechanic Arts High School.....	19. Average cost per pupil, upper elementary schools.....	\$97.16
7. Contract, Extensions Francis Parkman School.....	20. Above averages apply only to new buildings; additions and extensions have not been considered.	
8. Contract, Addition, Winchell School.....	21. Common Building is used jointly by the pupils of the Normal and Girls' Latin Schools; hence the cost of this building and the cubical contents have been equally distributed between these two buildings.	
9. Contract, Addition, Habart Street School.....		
10. Contract, Master's Office, Elliot School.....		
11. Total.....	22. Patrick A. Collins School is now used as temporary quarters for the High School of Commerce.	
	23. A building of class rooms only; is not really a high school; its accommodation if rated as a lower elementary school would be 1,000 pupils, and the cost per pupil \$129.83.	

APPENDIX V.

ARCHITECTS' SERVICES.

Every Architect employed by the Schoolhouse Commissioners of the City of Boston as the Architect for erecting a building is to perform the duties hereinafter provided.

SECTION 1.—*The Board.*—(a.) Is to furnish the Architect with the requirements and information for the design and construction of the building for which he is the Architect, and give the approximate cubical contents and proposed cost per cubic foot thereof;

(b.) Is to provide the services of domestic engineers to confer with the Architect during the preparation of preliminary studies and when these are accepted by the Board to advise the Architect in the details of their work, and make the necessary working drawings and specifications for, and have the direction of, the heating, ventilating and electric work for the building, said work being hereinafter designated as the domestic engineering;

(c.) Is to give the grade and lines of streets and adjoining lots;

(d.) Is to make all borings necessary to determine the quality of the foundations, and on request of the Architect, or of any person doing work on the building, furnish him full information relating to the above, the sewer, water, gas and electric service, and to the rights, restrictions and boundaries of the lot on which the building is to be constructed.

SECT. 2.—*The Architect.*—(a.) Is to consult and advise with the Board and make such preliminary studies as will acquaint the Board with the contemplated arrangement, design, construction and cubical contents of the building, and enable it to agree with the Architect upon a definite limit of cost therefor, and to accept said preliminary studies as the basis of working drawings and specifications;

(b.) Is to make upon the basis of said preliminary studies one complete set of working drawings in ink on tracing cloth, floor and framing plans, sections and elevations at one-eighth scale, and such detail drawings on a larger scale as are necessary to explain the specifications;

(c.) Is to furnish, revise and correct for the printer one com-

plete set of specifications for everything to be furnished or done in constructing the building, except the domestic engineering;

(d.) Is to loan to the Board, to make blue prints therefrom, the said set of working drawings;

(e.) Is to restudy and if necessary redraw, without charge, any or all of said drawings and specifications, if, owing to an unwarranted departure from the approved preliminary studies or to a needlessly extravagant or elaborate interpretation of them in said drawings and specifications, the lowest bid for doing the work in accordance therewith overruns the limit of cost agreed upon by the Architect and the Board;

(f.) Is, upon the signing of contract, to deliver to the Board, to remain their property, two sets of blue prints, mounted on cloth, taken from the said set of working drawings, a perspective drawing of the exterior of the building suitable for reproduction, and at the conclusion of the work a complete set of working drawings on tracing cloth, either the set previously referred to or a copy therefrom, which shall be corrected to agree with and embody all changes made during construction;

(g.) Is to make application for a building permit to the Building Department on a form signed by the chairman of the Board, and deliver to the Building Department two sets of such blue prints from the said set of working drawings as may be required by the Building Department (the Board furnishing specifications to the Building Department);

(h.) Is to have general supervision of the domestic engineering and be the Architect of all other work to be done under any written contract for the construction of the building, and render the full usual Architect's services and supervision for such other work;

(i.) Is, in the form prescribed by the Board, to make all estimates and allowances for payments under any contract in which he is made the Architect of the work, and such estimates for the domestic engineering are to be accompanied by certificates of said Engineers as to their accuracy;

(j.) Is to advise with the Board on any changes in the building contemplated by the Board, and is to order changes when required by the Board so to do;

(k.) Is to cause the drawings and specifications furnished by him to conform to all regulations of law and public authorities, and to be in accordance with established methods of building construction, faithfully carry out all the foregoing provisions, use all proper knowledge, skill and care therein, and be accountable for any failure so to do.

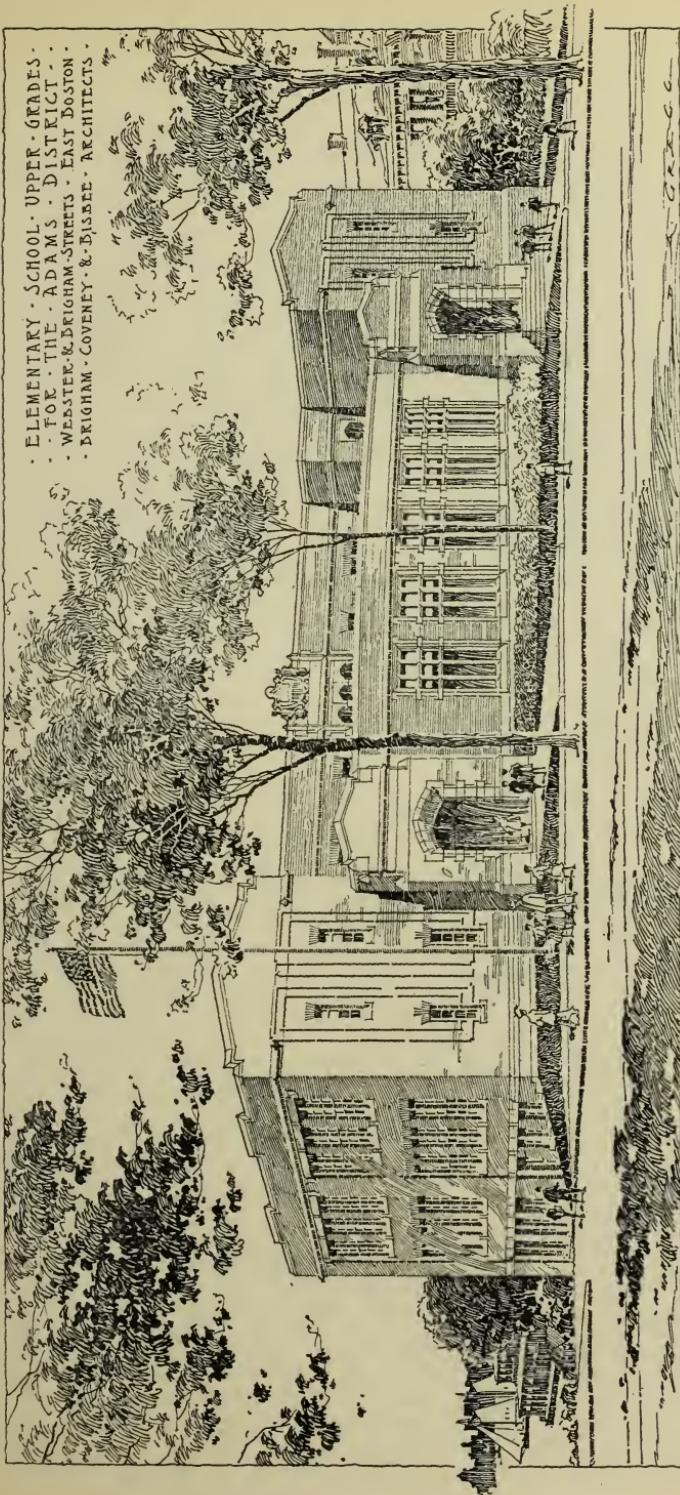
SECT. 3.—The city, as full compensation for the services aforesaid, is to pay the Architect $2\frac{1}{2}$ per cent upon the cost of the domestic engineering, and 5 per cent upon the cost of all other work, payments to be made as follows: $2\frac{1}{2}$ per cent upon all contracts other than those for domestic engineering is to be paid on the signing of such contracts, and thereafter $2\frac{1}{2}$ per cent

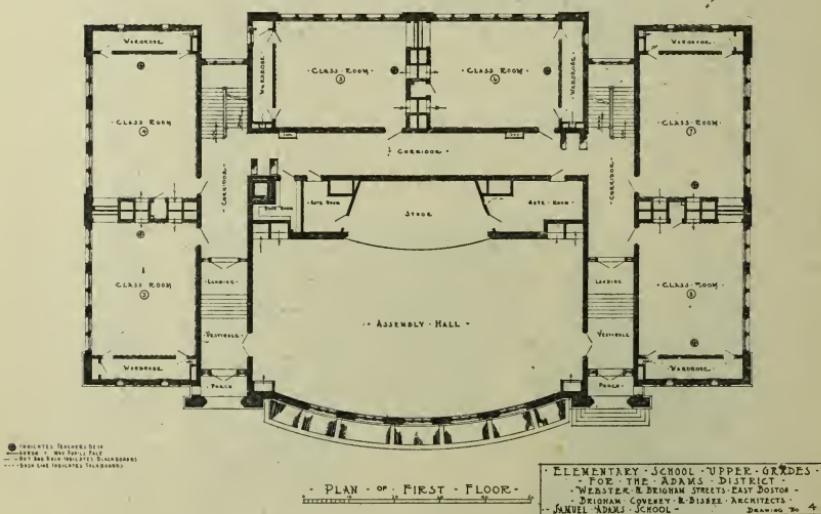
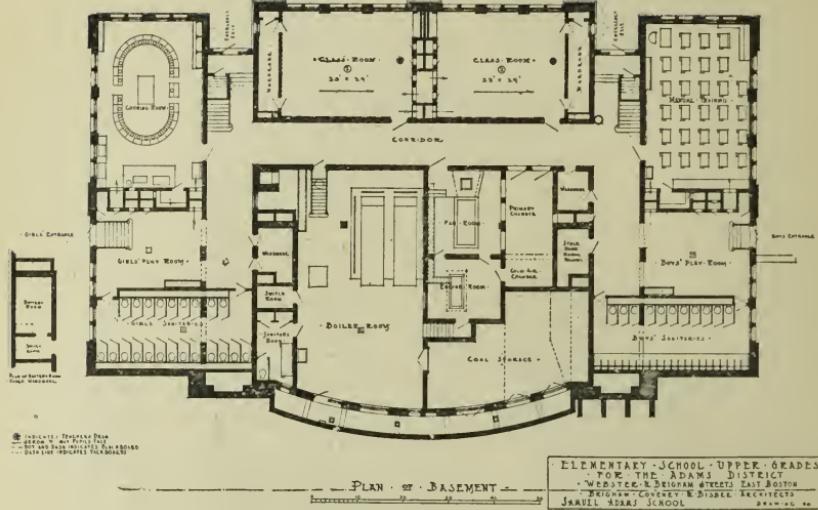
upon the value of the materials and labor, as specified in each estimate for payment under the contract, is to be paid on the making of the estimate, until the full payment aforesaid is made, and if any thereof remains unpaid at the completion of the work it is then to be paid. When preliminary studies are completed, the value of the Architect's services to date shall be reckoned one-fifth of the estimated total commission; when working drawings and specifications are ready for contract, the value of his services to date shall be reckoned as three-fifths of said commission. If the Board discontinue the services of the Architect at any intermediate stage the value of his services shall be reckoned proportionately.

SECT. 4.—When for any reason other than those stated in section 2, paragraph *e*, above, the Board shall set aside the whole or any part of an Architect's studies, drawings and specifications while retaining him to prepare corresponding new studies, drawings and specifications, for the same school building, the city shall pay the Architect for the work thus set aside a sum not exceeding three times the actual cost of draughting, and the new work shall be paid for on a commission basis, as stated in section 3, above.

SECT. 5.—In the above agreement the term "building" is used to define not only the structure itself, but all work in connection with it committed to the Architect by the order of the Board, as fencing, grading, roads, walks, planting, decorative painting and sculptural decoration.

ELEMENTARY SCHOOL - UPPER GRADES - FOR THE ADAMS DISTRICT - WEBSTER & BRIGHAM STREETS - EAST BOSTON - BRIGHAM COVENY & BISSET ARCHITECTS





APPENDIX VI.

NEW BUILDINGS.

LIST OF 1909.

Item 1. The Samuel Adams School.—The Adams District, elementary school, upper grades. This building is located on Webster street, East Boston, the lot containing about 33,480 square feet, of which the building will occupy 12,257, leaving 21,223 for a play-ground, about 33 square feet per pupil. It will contain ten class-rooms of standard size, *i. e.*, 23 by 29 feet; and four larger class-rooms to seat fifty, an assembly hall, manual training room and cooking-room.

The basement contains two class-rooms, play-rooms, toilet-rooms, manual training and cooking-rooms, and the heating apparatus. There are six class-rooms on the first and six on the second floor. The four large class-rooms are located two on each floor, two facing the southwest and two facing the north-east.

The building is of red brick and limestone and is of first-class construction throughout, except frame of roof, which is covered with a plastic slate.

Heating and Ventilation.—The building will be warmed and ventilated by the plenum-fan system. Fresh air will be delivered to the class-rooms by an 8-foot by 4-foot, three-quarter housing, steel plate fan, belt driven by a 12-inch by 8-inch low pressure steam engine operating at 25 pounds steam pressure. The fan will normally deliver 22,400 cubic feet of air per minute. Aspirating coils placed in the vent flues will assist in removing the foul air.

Two horizontal return tubular boilers will be installed, each 60 inches in diameter, 17 feet 4 inches long, and containing seventy-four 3-inch charcoal iron tubes, 16 feet long.

There will be a total of 6,850-square feet of radiation, comprising indirect radiators in the main heating chamber, wall radiators in the class-rooms under the windows, direct radiators in the wardrobes and small rooms, and pipe coils in the basement play-rooms and sanitaries.

The class-rooms and assembly hall will be equipped with automatic temperature control. A thermostat placed in the main fresh-air duct and connected to mixing dampers located in the walls of the primary heating chamber will maintain the air in the duct at a constant temperature of 68 degrees Fahren-

heit. The wall radiators in each class-room will be under the control of a thermostat placed in the room.

The horizontal fresh-air ducts in the basement will be located below the floor, and will be built of concrete. The vertical fresh air and vent ducts will be of terra cotta.

All water-closets in the basement sanitaries will be provided with outlets for seat ventilation, which will be connected together by galvanized-iron ducts, and run in two separate flues to the top of the main ventilators. Connection will also be made to the space back of the urinals. Ventilation will be assisted by aspirating coils placed in the main flues. The individual closets will have similar seat vents.

Electric System.—The building will be equipped with electric lights, a telephone system for interior communication, a system of electric clocks and program bells, all controlled by a single master clock, a projection lantern with reflectoscope attachment, and a combined local and auxiliary fire-alarm system.

Item 2. The Sherwin District, elementary school, upper grades. This item was changed with the consent of the Superintendent and School Committee, and, instead of erecting one large, upper grade, elementary school, it was decided to purchase two lots of land, one on Ruggles street, the other on Hunneman street, and to erect a lower elementary school of eight rooms on the former, which will be named the Lafayette School, and a lower elementary of eight rooms, with provision for an addition at a future date, which would complete the building and adapt it for upper grades, on the latter lot. This will be named the George T. Angell School.

The Lafayette School.—The lot on Ruggles street contains 27,516 square feet, of which the building covers 5,493 square feet, leaving a yard space of 22,023 square feet, about 62 square feet per pupil. The building will accommodate 352 pupils, and contains eight class-rooms, all of the regular standard size, 23 by 29 feet, to accommodate forty-four pupils in each. There will be four class-rooms on the first and four on the second floor, and the basement will contain toilet-rooms, play-rooms and the heating apparatus. There will be no kindergarten here.

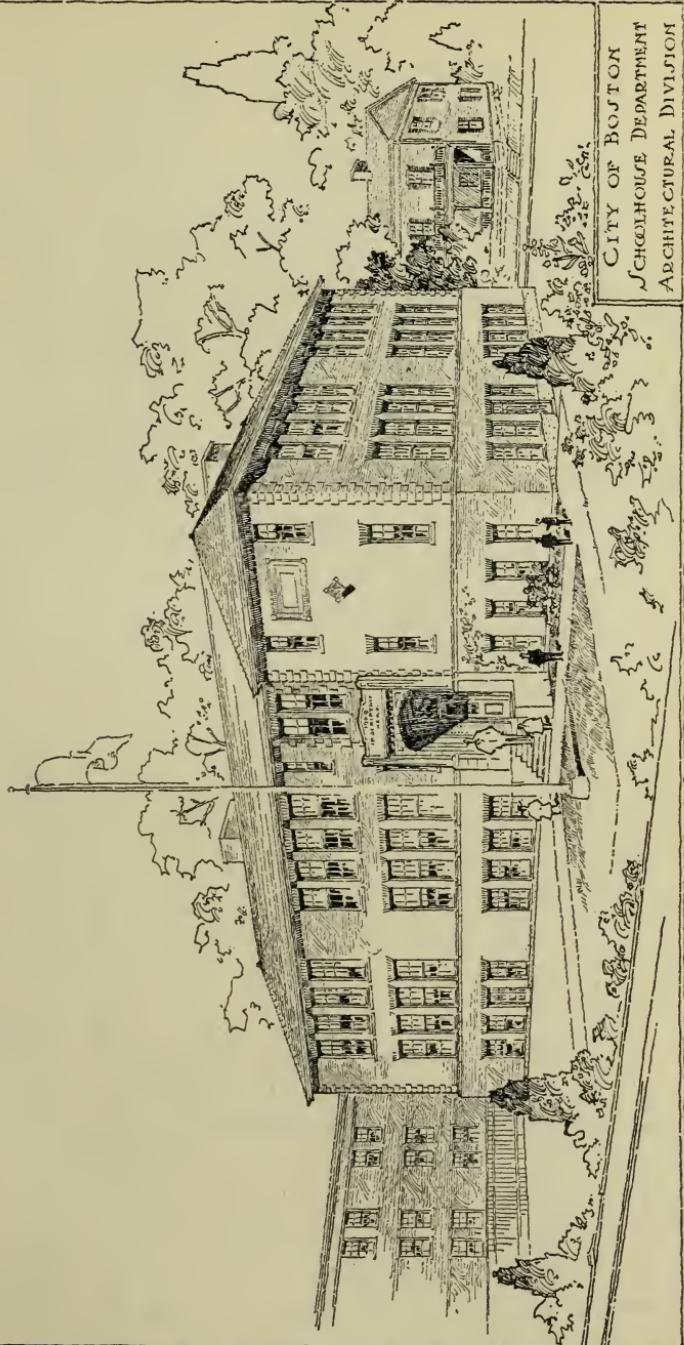
The building will be of red brick and artificial stone, of first-class construction except the roof, which will be framed with wood and slated.

Heating and Ventilation.—The building will be warmed and ventilated by the low pressure steam, gravity return, gravity indirect system. Ventilation will be stimulated by aspirating coils placed in the flues.

There will be two cast-iron sectional boilers set in brick work.

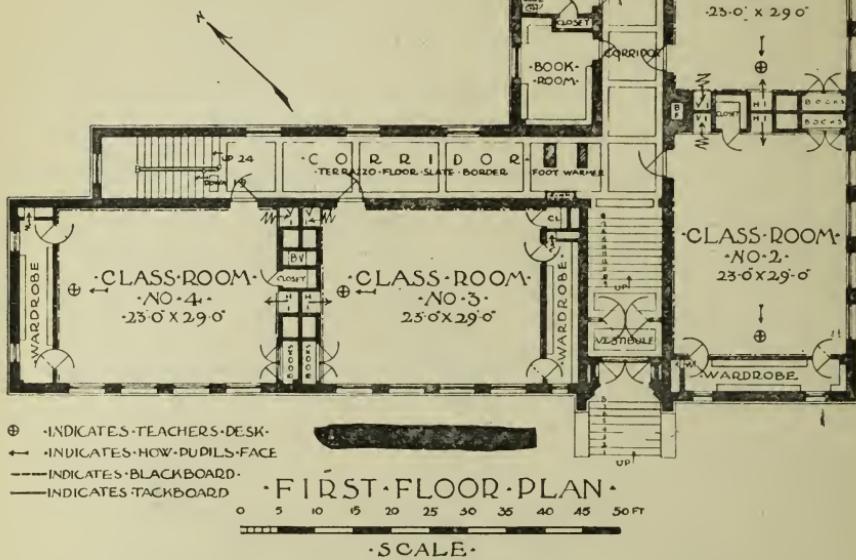
A total of 4,250 square feet of radiation will be installed. The class-rooms will be warmed by indirect pin radiators, generally placed in brick heating chambers in the basement. The temperature of the air entering these rooms will be controlled

ELEMENTARY SCHOOL JEWELLIN ~ HYDE DISTRICT BOGBEE JEWETT POXBUDY

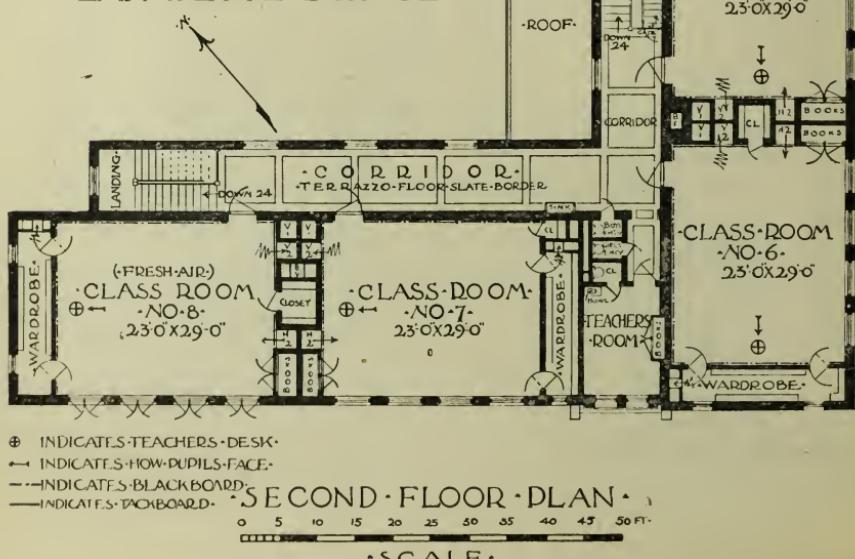


CITY OF BOSTON
SCHOOLHOUSE DEPARTMENT
ARCHITECTURAL DIVISION

• CITY OF BOSTON •
 • SCHOOLHOUSE DEPT •
 • LOWER GRADE ELEMENTARY •
 • SHERWIN HYDE DISTRICT •
 • LAFAYETTE SCHOOL •



• CITY OF BOSTON •
 • SCHOOLHOUSE DEPT •
 • LOWER GRADE ELEMENTARY •
 • SHERWIN HYDE DISTRICT •
 • LAFAYETTE SCHOOL •



by hand mixing dampers operated by the teachers. The first floor corridor will have foot warmers. All other rooms in the building will be warmed by direct radiation.

The warm air and vent flues for the class-rooms will be made of brick.

All water-closets in the basement sanitaries will be provided with outlets for seat ventilation, which will be connected together by galvanized-iron ducts and run in two separate flues to the top of the main ventilators. Connection will also be made to the space back of the urinals. Ventilation will be assisted by aspirating coils placed in the main flues. The individual closets will have similar seat vents.

Electric System.—The building will be equipped with electric lights, electric clocks and program bells and a combined local and auxiliary fire-alarm system, but no telephones.

The George T. Angell School.—The lot on Hunneman street contains 43,814 square feet and fronts on three streets,—Hunneman street, Harrison avenue and Reed street. The building will contain eight class-rooms and a cooking-room, provisions being made for an addition in the future, which will contain eight class-rooms, manual training room and assembly hall, thus making the completed building an upper elementary school, with sixteen class-rooms, cooking and manual training rooms and assembly hall. The building, when completed, will cover over 12,850 square feet, leaving 20,964 square feet for a playground, or about 39 square feet per pupil. It will face the southwest, the original building occupying the Harrison avenue side of the lot and the addition the Reed street side. There will be three class-rooms, 23 by 29 feet, on the first and also on the second floor in the original building, and on each floor there will be one larger room to seat fifty.

The basement contains the cooking-room, play-rooms, toilet and heating plant. The exterior will be red brick and artificial stone. The building will be of first-class construction, except the roof, which will be a flat composition roof.

Heating and Ventilation.—The building will be warmed and ventilated by the low pressure steam, gravity return, gravity indirect system. Ventilation will be stimulated by means of aspirating coils placed in the vent flues.

There will be two horizontal return tubular boilers, each 48 inches in diameter and 16 feet 4 inches long, containing fifty 3-inch charcoal iron tubes, 15 feet long. Provision is made for installing a third boiler whenever the proposed addition is built.

There will be a total of 5,141 square feet of radiation. The class-rooms will be warmed by indirect pin radiators generally placed in brick heating chambers in the basement. The temperature of the air entering these rooms will be controlled by hand mixing dampers operated by the teachers. The first floor corridor is provided with foot warmers incased in gal-

vanized iron and hung from the basement ceiling. All other rooms in the building are warmed by direct radiation.

The warm air and vent flues for the class-rooms will be built of brick.

All water-closets in the basement sanitaries will be provided with outlets for seat ventilation, which will be connected together by galvanized-iron ducts and run in two separate flues to the top of the main ventilators. Connection will also be made to the space back of the urinals. Ventilation will be assisted by aspirating coils placed in the main flues. The individual closets will have similar seat vents.

Electric System.—The building will be equipped with electric lights, electric clocks and program bells, a telephone system and a combined local and auxiliary fire-alarm system.

Item 3.—The William Lloyd Garrison School.—The Lewis District, elementary school, lower grades, is located on Hutchings street, Roxbury. The lot extends through to Brookledge street, and contains about 45,000 square feet. This building also is planned for a future addition. The original building will contain ten class-rooms, of which six are the standard size to accommodate forty-four pupils, *i. e.*, 23 by 29 feet, and four are larger, 23 by 32 feet, and will seat fifty pupils. One of the larger rooms will be used as a kindergarten, and is divided into two rooms. The original building will occupy 6,614 square feet, the addition 9,389 square feet, making a total of 16,003 square feet, leaving a play-ground space of 28,997 square feet.

The basement contains toilet-rooms, play-rooms and heating apparatus. There are three standard size class-rooms and two larger rooms, one of which will be used as kindergarten, on the first floor, and three standard size and two larger rooms on the second floor. The building is of first-class construction except the roof, and is built of red brick and artificial limestone, and has a slate roof.

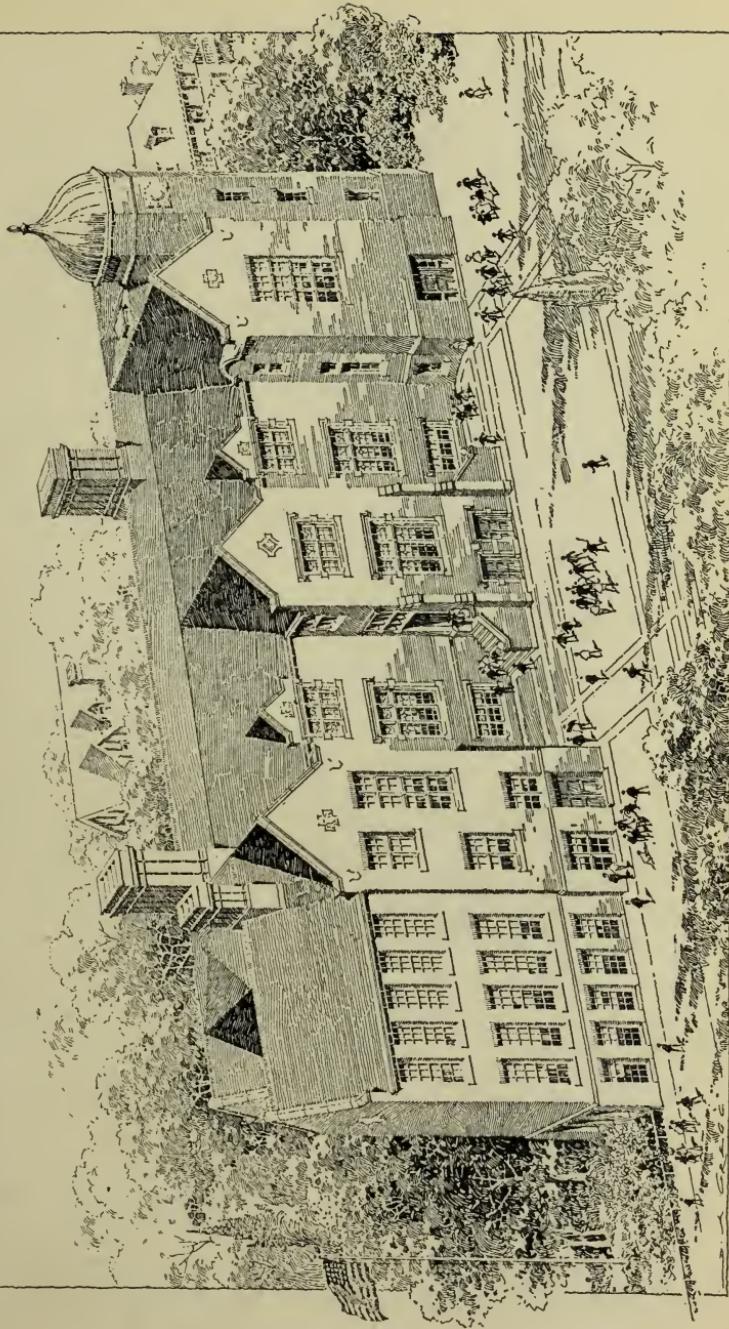
When completed the building will have eighteen class-rooms, manual training and cooking-rooms, kindergarten and assembly hall, thus making it a fully equipped upper elementary school, but the present building will have neither assembly hall, cooking-room nor manual training room.

Heating and ventilation.—The building will be warmed and ventilated by the low pressure steam, gravity, return gravity, indirect system. Ventilation will be stimulated by means of aspirating coils placed in the vent flues.

There will be two horizontal return tubular boilers, each 54 inches in diameter and 16 feet 3 inches long, containing sixty 3-inch charcoal iron tubes, 15 feet long. Provision is made for installing a third boiler whenever the proposed addition is built.

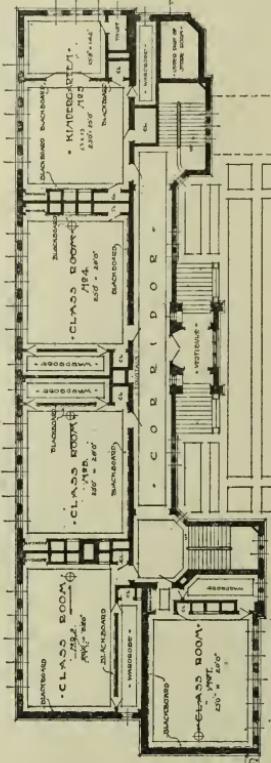
There will be a total of 5,708 square feet of radiation. The class-rooms will be warmed by indirect pin radiators, generally

"NEW ELEMENTARY SCHOOL,
FOR THE LEWIS DISTRICT, BOSTON,
HUTCHINSON & BROOKS, ARCHITECTS.
NEWNALL & BLEVINS — ARCHITECTS."



WILLIAM LLOYD GARRISON SCHOOL
LOWER ELEMENTARY SCHOOL
FOR THE LIBID DISTRICT
HUTCHINS ST. BOSTON
C. W. HALL & SONS

- GRASS PLOT



- FUTURE ASSEMBLY HALL -

- FIRST FLOOR - PART -

- GRASS PLOT -

- FUTURE - DOWNGRADING -

placed in brick heating chambers in the basement. The temperature of the air entering these rooms will be controlled by hand mixing dampers operated by the teachers. The first floor corridor is provided with foot warmers, encased in galvanized iron and hung from the basement ceiling. All other rooms in the building are warmed by direct radiation.

The warm air and vent flues to the class-rooms will be built of brick.

All water-closets in the basement sanitaries will be provided with outlets for seat ventilation, which will be connected together by galvanized-iron ducts and run in two separate flues to the top of the main ventilators. Connection will also be made to the space back of the urinals. Ventilation will be assisted by aspirating coils placed in the main flues. The individual closets will have similar seat vents.

Electric System.—The building will be equipped with electric lights, a telephone system for interior communication, a system of electric clocks, controlled by a single master clock, a system of program bells, manually operated, and a combined local and auxiliary fire-alarm system.

Item 4. The Addition to the Girls' High School. This addition is built on the lot adjoining the present Girls' High School, facing Pembroke street. The lot, part of which is the original playground of the school, and part an addition purchased in 1902, contains 7,026 square feet. The building will be of red brick and artificial stone, and will have a flat roof. It will be three stories high and of first-class construction throughout. There will be two stories of class-rooms, four on each floor, 26 by 32 feet. There will be a large gymnasium, with an area equal to that of four class-rooms and corridors, located on the first floor. It will be 20 feet high. There will be shower-bath and locker rooms in the basement for the pupils using the gymnasium, and also a lunch-room.

The equipment of the new portion is supplemented by additional work that has been done in the old building, the installation of a new toilet-room on the second floor. It is proposed to equip the building with an electric elevator, so as to facilitate the service in this rather high building. When completed the school will have accommodation for 1,700 pupils.

Heating and Ventilation.—The building will be warmed and ventilated by the plenum-fan system. Fresh air will be delivered to the class-rooms by a 7-foot by 4-foot, three-quarter housing, steel plate fan, belt driven by a 13-inch by 7-inch low pressure steam engine operating at 25 pounds steam pressure. The fan will normally deliver 23,114 cubic feet of air per minute. Aspirating coils placed in the vent flues will assist in removing the foul air.

Steam will be obtained from the boiler plant in the present building.

There will be a total of 6,769½ square feet of radiation, comprising indirect radiators in the main heating chamber, wall radiators in the class-rooms under the windows, direct radiators in the wardrobes, lunch-room and small rooms and pipe coils in the basement, shower-bath, and sanitaries.

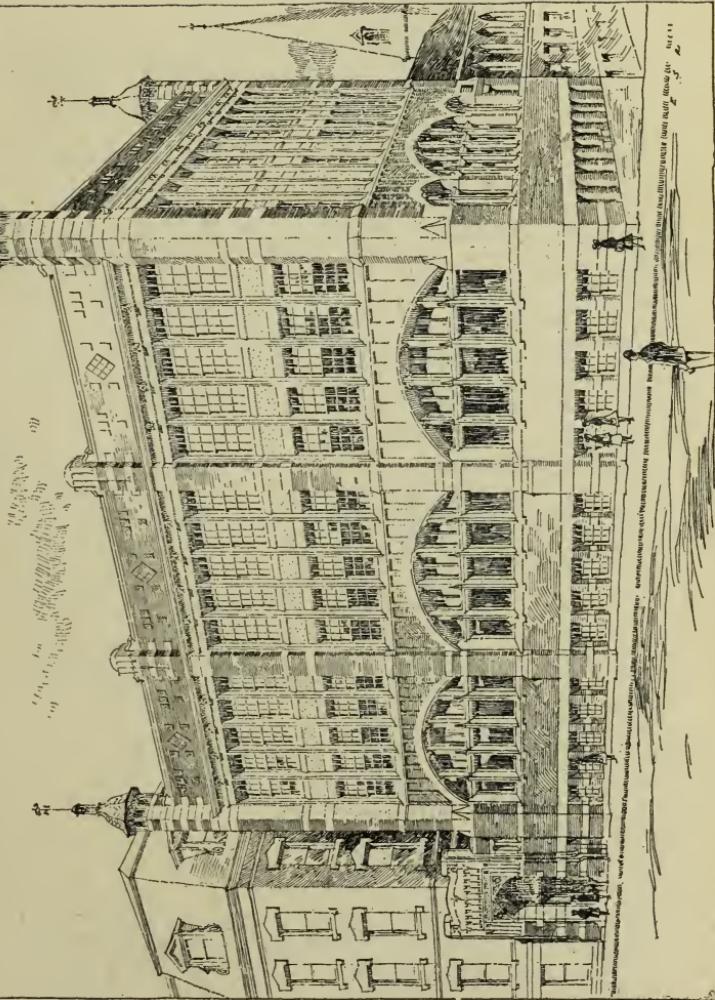
The class-rooms and the gymnasium will be equipped with automatic temperature control. A thermostat placed in the main fresh-air duct and connected to mixing damper located in the walls of the primary heating chamber will maintain the air in the duct at a constant temperature of 68 degrees Fahrenheit. The wall radiators in each class-room will be under the control of a thermostat placed in the room.

The horizontal fresh-air ducts in the basement will be located below the floor and will be built of concrete. Some of the vertical fresh-air and vent ducts will be built of galvanized iron, the remainder being of masonry.

All water-closets in the basement sanitaries will be provided with outlets for seat ventilation, which will be connected together by galvanized-iron ducts and run in a separate flue to the top of the main ventilator. Ventilation will be assisted by aspirating coils placed in the main flue. The individual closets will have similar seat vents.

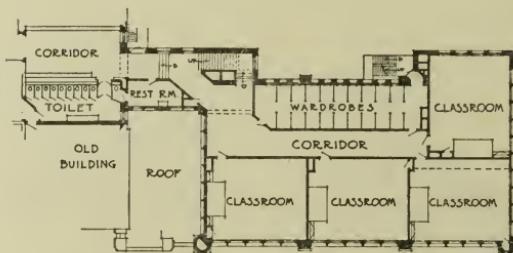
Electric System.—The building will be equipped with electric lights, a telephone system for interior communication, a system of electric clocks and program bells controlled by a master clock, and a combined local and auxiliary fire-alarm system.

ADDITION TO GIRLS HIGH SCHOOL - BOSTON
COOLIDGE AND CARLSON ARCHITECTS

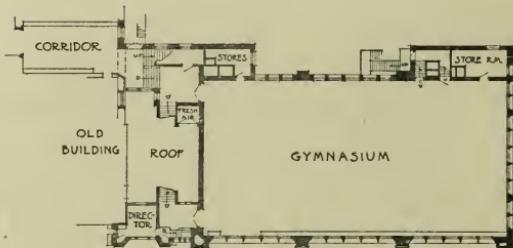


CITY OF BOSTON - SCHOOLHOUSE DEPARTMENT
ADDITION TO GIRLS' HIGH SCHOOL
PEMBROKE STREET - BOSTON
COOLIDGE & CARLSON - ARCHITECTS

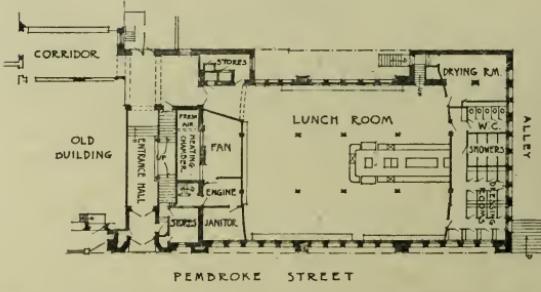
0 5 10 15 20 25 30 35 40
SCALE



SECOND FLOOR PLAN
(THIRD FLOOR SIMILAR)



FIRST FLOOR PLAN



GROUND FLOOR PLAN

APPENDIX VII.

GENERAL INFORMATION FOR FIRST CLASS CONSTRUCTION.

ELEMENTARY SCHOOLS.

SCHOOL-ROOMS. (1.) *Size* will be 23 by 29 for elementary grades and not less than 12 feet in clear. Modification allowable only after consultation with the Board. A building having no grades above IV., with no desk larger than 21 inches, might have rooms 22 by 28, but the standard size gives the extra space wanted for modern methods. Desks should be laid out on the preliminary plans. (See drawing.) This drawing should give 18-inch, 21-inch and 23-inch desks, laid out in a 23 by 29 room. The School Committee advise, and this Board has adopted, the policy of having a small portion of the rooms in a building, perhaps 10 or 20 per cent, of a size that will seat 50, *i. e.*, 23 feet by 32 feet. Every class-room shall be consecutively numbered on the plans to designate it. These numbers to be for the doors, as noted below, and for the annunciator. Other rooms that appear on the annunciator to be named on the plans, as assembly hall, teachers' or master's room, cooking-room, manual training room. The kindergarten shall be counted as a class-room. In high schools, both class and recitation rooms to be numbered, other rooms named.

(2.) *Windows* will be on the long side for left-hand lighting. The glass measured inside the sash shall contain not less than $\frac{1}{3}$ of floor area, about 135 square feet for a room 23 feet wide;* neither double run of sash nor double glazing will be required, but a

* It is evident that if this area of glass is requisite to light a room in a building with free space about it, such, for example, as the Sarah J. Baker School, it is inadequate for a room in a building situated like the Christopher Columbus, on a narrow street. Under exceptionally free conditions, with no obstructions to the direct light from the sky, it is possible that the area of glass might be reduced, but it appears to be no more than enough for the ordinary conditions of the new buildings, and should be increased, if possible, for such situations as that of the Columbus.

dustproof metal weather strip; the head square and close to the ceiling; the sill about 2 feet 6 inches from the floor; the windows divided with muntins, no large sheets of glass. Finished with plastered jamb, no architrave, metal corner bead.

(3.) *Doors.*—One to corridor, 3 feet 6 inches by 7 feet, partly glazed, to open out, placed preferably near the teacher's end; brass-plated steel butts, 4-lever mortise lock, master keyed; cast brass knobs, marble thresholds to corridors. Doors to have 2-inch, plain brass numbers, and cardholders $3\frac{1}{2}$ inches by 5 inches, and hooks to hold open.

(4.) *Floors* will be Georgia pine rift or maple.

(5.) *Walls* will be painted burlap up to top of blackboards, or of tack boards, and above this plaster tinted in water color,—a warm gray green or buff gives the best results,—the blackboards 4 feet high, 2 feet 2 inches from floor in kindergarten, 2 feet 4 inches to 2 feet 6 inches to Grade IV., and 2 feet 8 inches in Grades V. to VIII. Behind the teacher and on the long side. These will be of best black slate, $\frac{1}{4}$ inch thick. At end, in place of blackboard, pine sheathing with burlap stretched over it for a tack board, to extend from base to the moulding at top of blackboards. In lower grades a rack or tack board for holding cards is required above the blackboard. A picture molding at top of burlap, and also near ceiling in all rooms. (See drawings.)

(6.) *Ceilings* will be level, plaster tinted a light cream color.

(7.) *Lights.*—Nine chain pendant electric fixtures on three switches. No gas.

(8.) *Heating and Ventilation.*—The inlet for heat about 5 square feet, the outlet for ventilation about 5 square feet.

(9.) *Bookcase.*—Provide a bookcase in any convenient position, capable of containing 300 octavo volumes (600 volumes in bookcases for upper grades); upper doors fitted with pin tumbler locks, and latch and knob; drawers fitted with pin tumbler lock and small brass knobs. Lower doors to have pin tumbler locks; same lock in each bookcase; all bookcase locks master keyed. (See drawing.) Special equipment for care of books where

school is held day and evening is described on page 20, Report 1908.

(10.) *Map Supports.*—Provide one map support for each class-room in Grades IV., V., VI., VII., and VIII., preferably behind the teacher's desk or opposite the windows.

(11.) *Teacher's Closet.*—Provide a small closet for teacher's coat and hat, preferably opening from the class-room, but allowable from the wardrobe.

FRESH-AIR
ROOMS.

The School committee is responding to the more general demand for fresh-air rooms for children who are anaemic or of tubercular tendencies. At present all that the Board is advising to meet this new demand is that a sunny room, preferable a sunny corner room, be chosen for this work, and that the windows on one or on two sides be made casement to open out, instead of double hung; and that the heat be largely direct, so that the temperature can be quickly raised if necessary when the windows are closed. Otherwise these rooms will be the same as other class-rooms.

WARDROBES.

A (1.) *Size.*—Wardrobes will adjoin school-rooms and be from 4 feet 6 inches to 5 feet wide.

(2 and 3.) *Windows and Doors.*—Outside light, two doors, both connecting with school-room, and not to corridor, and having no thresholds. Doors, double swung, 2 feet 6 inches wide, brass double acting butts, foot and hand plates, hooks or adjustable stops to hold open, ventilation under door farthest from vent.

(4.) *Floors.*—Terazzo, with granolithic border and base.

(5.) *Walls.*—Painted burlap up to hook rail; poles on brass-plated iron brackets with hooks under and pins over, 44 in number; umbrella clips and drip gutter below. (See drawing.) Walls above, plaster, tinted. Height of lower pole, kindergarten, 30 inches from floor; lower grades, 36 inches to 40 inches; upper grades, 44 inches, 48 inches and 52 inches; distance between poles, 8 inches for elementary, 12 inches for high schools. Pins and hooks, 8 inches to 12 inches on centers for elementary and 16 inches to 18 inches for high.

(6.) *Ceiling.*—Plaster, untinted.

(7.) *Light.*—One lamp. Ceiling outlets, electric. Switch in class-room.

(8.) *Heating and Ventilation.*— Heating, direct. Ventilation, direct, $1\frac{2}{3}$ square feet area cross section.

- WARDROBES. B The so-called Chicago type has been studied in a model for one building, but has not yet been tested in practice. It is a recess 20 inches deep and about 14 feet long, equipped with the standard pole and 44 hooks. The floor is of terazzo, the ceiling is at about 7 feet above the floor. The doors are hung like sash, to slide up, are framed flush and covered with burlap for a tack-board. The ventilator is independent of the room vent, but there is no heat except what is drawn in from the room at the bottom.

CORRIDORS AND VESTIBULES. (1.) *Size.*— Not less than 8 feet wide for four rooms on a floor; not less than 10 feet for over four rooms, governed by length, access to stairs, etc.

(2.) *Windows.*— Outside light essential.

(3.) *Doors.*— Main outer doors to open out, heavy butts, standard, master keyed, school lock; door check; heavy hooks to hold open. Vestibule doors open out, heavy butts, pulls, push plates, hooks to hold open, door checks, no locks. Outer doors to basement open out, and fitted with standard latch lock. Other hardware as above.

(4.) *Floors.*— Terazzo divided into areas not to exceed 80 square feet, by slate strips or linoleum glued on a cement surface.

(5 and 6.) *Walls and Ceilings.*— A light glazed brick, untinted walls and ceilings. Put picture molding at ceiling in corridors.

(7.) *Light.*— Ceiling or short pendant fixtures (electric) 32 candle-power each, also gas for emergency in corridors, on stairs, and in vestibules.

(8.) *Heating and Ventilation.*— Heat direct, supplemented by foot warmers on first floor. Ventilation where possible.

(9.) *Sinks and Closets.*— On each floor above the first one or two 4-foot sinks, and emergency closets, with water-closet, one for boys and one for girls.

STAIRCASES. (1.) *Number and Arrangement.*— Determined by the Board, but fireproof construction in all cases, and not over 5 feet wide.

(2.) *Material.*— The treads, North River stone on iron string, or concrete construction

with granolithic surface. Rails of a simple pattern, easily cleaned; wall rails are not wanted.

(3) *Steps.*—About 6½ or 7 inches by 10. Rail not less than 2 feet 8 inches on runs and 3 feet on landings.

SANITARIES.

(1.) *Size.*—General toilet-rooms in basement, in size approximating space for 2.25 water-closets for each school-room, .75 boys, 1.5 girls, and 33 inches of urinal for every school-room, arranged for convenient supervision and circulation.* Slate sinks, length from 10 inches per class-room in small buildings to 6 inches per class-room in large buildings, located preferably in the play-rooms. The above refers to mixed schools.

(2.) *Windows.*—Ample outside light; glazed where exposed to view outside with factory ribbed glass. To have wire guards.

(3.) *Doors.*—The doors arranged "in" and "out," with spring or door check and stout brass hooks to hold open; glazed with ribbed glass; half doors to water-closets, except where ordered omitted.

(4.) *Floors.*—Asphalt. Boys' drained to urinal, girls' to floor wash.

(5.) *Walls.*—Salt-glazed brick or other nonporous, inexpensive surface, 7 feet high; above, brick painted.

(6.) *Ceiling.*—Untinted plaster or white-washed concrete. No basement ceiling need be furred level.

(7.) *Light.*—Ceiling or short pendant electric fixtures.

(8.) *Heat and Ventilation.*—Heat direct. Ventilation through water-closets and space back of urinals, allow 10 square inches local vent for each water-closet and 8 square inches for each lineal foot of urinal.

MASTERS' AND
TEACHERS'
ROOMS.

(1.) In each school of the upper grades a room of about 240 square feet for the master, with a water-closet and bowl and a book-closet adjoining. This room should be near the center of the building, *i. e.*, on the second floor in a three story building. In all schools a room or rooms for teachers, averaging about 300 square feet for ten teachers, with one

* Inquiries have been addressed to principals of all schools where water-closets and urinals have been installed on this basis, and the consensus of opinion appears to be that the number cannot be reduced without inconvenience, but that it is satisfactory as it stands.

water-closet and bowl for each ten. Doors to be clearly marked "Master" or "Teachers" in brass letters.

(2.) Where men as well as women are teachers, a separate room with toilet accommodations for men.

(3.) Opportunity in teachers' rooms for warming luncheon, either gas or electric.

PLAY-ROOMS.

(1.) All free basement space to be arranged as play-rooms for boys and girls. Salt-glazed brick, 7 feet high, and painted or whitewashed brick or stone walls above. Granolithic floors drained to floor washes, plaster ceilings or whitewashed concrete. Basement doors and windows to have wire guards in channel iron frames; guards to be hinged and padlocked.

PLAY-GROUNDS.

Play-gounds to have boundary fences and to be paved for the play-yards, coal and ash teams. Borders to be planted.

PLUMBING FIXTURES.

(1.) *Water-closets.*—The basement water-closets for elementary schools are short hopper closets; elsewhere, a heavy washdown closet. (See drawing.)

(2.) *Slate partitions.*—Any sound, close-grained slate, black, green or purple, supported at ends with iron pipe about 8 feet high, tied together and to the wall, to which doors are hung. (See drawing.)

(3.) *Urinals.*—The urinals will be of slate, floor slab, trough and back, with partitions, flushed automatically, through $\frac{7}{8}$ -inch perforated pipe, with cold water; vented at bottom, into space behind. (See drawing.)

(4.) *Sinks* of black slate, self-closing cocks, set 15 inches on centers, and cup-hooks at each side of cocks, and jet drinking fountains, in the external angles. A sink is desired for electrician unless there is one near by.

(5.) *Floor Washes* in sanitaries and play-rooms as already mentioned. (See drawing.)

(6.) *Piping.*—(a.) Cast iron must be laid on good footing in basement, clean-outs at every change of direction. Soils and vents exposed as far as possible, no asphaltum, but oil-tested, red lead and three coats of paint.

(b.) *Supplies.*—Exposed as far as possible; where covered may be plain brass, elsewhere polished brass; no nickel-plate. Hot water for janitor's use in basement, cooking-room, and for master's and teachers' rooms and

emergency toilets. Supply from boiler and from summer boiler, if any, or from an independent hot-water heater.

(c.) *Fire Lines.*—In buildings over three stories high, one or more lines of 3-inch pipe if requested by the Board.

SPECIAL ROOMS.

ASSEMBLY HALLS.

(1.) Assembly halls should accommodate from 400 to 800. It is not considered necessary to seat the full number of pupils in schools of greater capacity. The floor to be level and of wood like class-rooms. The windows to be fitted with rebated moldings to take black shades, and so designed as to make the operation of shades practical and simple. The platform should be capable of accommodating one, or, in the large schools, two classes, and should have removable stepped platforms of wood to take the benches. Galleries may be used where the hall is two stories in height. Anterooms near the platform are desirable, and a connection from adjoining class-rooms to the anterooms or directly to the platform. A dignified architectural treatment of the walls and a studied color scheme for walls and ceiling is expected. The lighting, acoustics and exits should be such as belong to a small lecture hall. Artificial lighting to be under control from at least two points, one of which must be near an exit. Electric outlet for 30 ampere projection lantern, 25 feet from curtain. Provide recess in ceiling over platform for spring rolled curtain 13 feet long.

(1.) *Size.*—Room, generally located in basement, should be approximately 900–1,000 square feet, preferably a corner room, and the larger of the two allowed sizes of rooms; and arrangement, shown by drawing, for number of benches there given, 28.*

(2.) *Light.*—The windows should be as near full length as possible, and on two sides. Artificial light in chain pendant electric fixtures, one light to every four benches.

(3.) *Floors.*—Of wood.

(4.) *Walls.*—A basement room should be finished as a shop; salt-glazed brick up to 7 feet where exposed, and above blackboard

* In elementary schools for boys only, 25 is sufficient, as this would always take half a class.

space of about 15 running feet, 4 feet high, and above this brick walls whitewashed. If above basement, finished as a class-room.

(5.) *Ceilings.*— Like basement.

(6.) *Heating and Ventilation.*— The same as in class-rooms.

(7.) *Fittings.*— (a.) *Stock-room.*— Stock-room should contain at least 80 square feet, preferably long and narrow. Eighteen-inch shelves should run around the room, 5 feet 6 inches and 6 feet from the floor.

(b.) *Wardrobes.*— Wall space for 30 double coat and hat hooks, in a separate room.

(c.) *Teachers' Closet.*— Teachers' closet should be large enough to be used also for storage of finished work, and should be fitted with all shelving possible as well as with the customary coat hooks. An area of 40 square feet is adequate.

(d.) *Bookcases.*— Like those in class-rooms, 150 capacity.

(e.) *Work-rack.*— About 28 feet long, made in sections, 6 feet 6 inches high, and 2 feet deep. The length is to take 27 compartments (equaling the number of benches) and the height the number of divisions that use the room (two each day, five days, outside limit). Compartments to have numbers painted. (For all of these see drawings.)

(f.) *Sink.*— A 3-foot porcelain enameled iron sink, with hot and cold water.

(g.) *Furniture.*— (Not included in the building contract.) The furniture comprises 28 benches and stools, 4 display frames about 6 feet long and 30 inches wide, demonstration steps and guard rail, teacher's desk, table 4 feet by $2\frac{1}{2}$ feet with unfinished top, 1 desk chair and 2 common chairs. (See drawing.) Lay these out on preliminary drawings.

COOKING-ROOM.

(1.) *Size.*— Should have an area of 900-1,000 square feet, preferably a corner room on top floor but generally in basement, and the larger of the two allowed sizes of room, and arranged for 28 stations.

(2.) *Light.*— Windows as in a class-room, if located in a corner, from two sides. Artificial light as in a class-room.

(3.) *Walls.*— Above basement, similar to school-rooms, blackboards, 4 by 10 feet, back of teacher's desk. Walls painted in oils. A

basement room may have salt-glazed brick walls up to 7 feet and painted brick above. (See drawings.)

(4.) *Floors.*—The floor linoleum, on cement, except space occupied by ranges, which is tiled.

(5.) *Ceilings.*—Ceilings like basement, or if above basement like class-rooms.

(6.) *Heat and Ventilation.*—Less heat is required than in a class-room, but the ventilation should be the same, with additional vent from the demonstration ranges.

(7.) *Fittings.*—(a.) *Wardrobes.*—Provision for 28 pupils, double coat and hat hooks in separate lighted closet, and small teacher's closet.

(b.) *Work benches,* accommodating 28 pupils, fitted with compartment for utensils, bread-board, etc., a Bunsen burner with a hinged iron grill over it, set on aluminum plates at each station; benches arranged in the form of ellipse, or oblong, with access to center from two sides; top of pine 26 inches wide; open underneath and supported on pipe standards. One section detached and fitted as a demonstration bench; a clear space of 4 feet all around. Dining table (furnished under another contract) is to be set in center. (See drawings.) Lay these out on preliminary drawings and include in final drawings and contract.

(c.) *Dresser.*—Ten feet long, in 3 sections, 4 adjustable shelves and glazed sliding, or hinged, doors at top; one set of 3 drawers and 2 cupboards on lower part. A shelf should be put in each cupboard about 12 inches from top.

(d.) *Fuel-box.*—In 2 compartments, each about 24 inches square and 30 inches deep, with hinged lids; small shelf in one section. Accommodations in the main coal-room for a supply of range coal and kindling wood.

(e.) *Bookcase.*—Similar to those provided in class-rooms.

(f.) *Sink.*—Soapstone, 5 feet long; 2 cold and 2 hot water cocks; soapstone drip shelves, 24 inches long, at each end of sink, and a small sink about 2 feet long, with 1 hot and 1 cold water cock. Sinks should be near ranges.

(g.) *Hot-water Supply.*—(See instructions in plumbing.)

(h.) *Coal and Gas Ranges.*—A six-hole

coal range and a similar gas range, with hood provided and set on a hearth previously mentioned.

(i.) *Refrigerator*.— Will be a part of the furniture. Furnished under another contract.

KINDERGARTEN.

(1.) *Size*.— The rooms can be contained in the space of a class-room and wardrobe, but a slightly larger area, 800 to 900 square feet, is desirable, and preferably the larger of the two allowed sizes of room. They comprise a large room, a small room, a supply closet, a wardrobe and a water-closet. The large room should take a 16-foot circle, regulation lines painted on the floor, with at least 4 feet all around it. The small room, about 200 square feet.

(2.) *Light*.— Windows should be as in a class-room, if on a corner, on both sides. Exposure should be sunny. Artificial light of the class-room type, arranged for the different rooms.

(3.) *Doors*.— Door to corridor as in class-rooms. Wide doors should open from small room into large room.

(4.) *Floors*.— Linoleum cemented on to concrete surface, with painted lines as above.

(5.) *Walls*.— As in class-rooms, with black-board as in lower grades.

(6.) *Ceilings*.— As in class-rooms.

(7.) *Heat and Ventilation*.— As in class-rooms.

(8.) *Fittings*.— (a.) *Wardrobe*.— Hooks for 60, arranged as in ordinary wardrobes.

(b.) *Teachers' Closet*.— For clothing of two or three teachers.

(c.) *Toilet-room*.— Immediately adjoining, with low-down seat and bowl or sink.

(d.) *Bookcase*.— As in lower grades.

NURSE'S ROOM.

(1.) *Size*.— From 200 to 400 square feet, according to size of school.

(2.) *Windows*.— Outside light as in class-rooms.

(3.) *Shades*.— Set to roll from window-sill upward. Not in building contract.

(4.) *Doors*.— One door to corridor, as in class-rooms, marked "Nurse's room."

(5.) *Walls*.— Upper two-thirds plaster, smooth finish, round corners, painted with light green oil paint. Lower one-third to floor, glazed white tile.

(6.) *Floor*.— Terazzo, like corridors.

(7.) *Heat and Ventilation*.—As in class-rooms.

(8.) *Light*.—Pendant electrolier with special shade. Extra socket on body of fixture for hand portable.

(9.) *Nurse's Closet for Supplies*.—Size, 3 by 4; one shelf; 6 hooks for clothing.

(10.) *Bath Tub*.—Five-foot porcelain enameled iron, hot and cold water, where requested by Superintendent of Nurses.

(11.) *Bowl*.—Enameled iron, hot and cold water faucets to turn by foot pressure, *i. e.*, hospital pattern. Hot water must be available all the year.

(12.) *Stove and Clock*.—Gas or electric heater as in teachers' rooms, and a secondary clock.

(13.) *Fittings*.—(Not in building contract.)

(a.) *Cabinet*.—Oak finish, medical cabinet, adopted as standard by Schoolhouse Commission.

(b.) *Stool*.—White enamel revolving stool. (Not in building contract.) (c.) *Table*.

—Dressing table, white enamel frame, glass top and shelf; size 16 by 20, rubber crutch tips. (d.) *Filing Case for Nurse's Records*.—Oak finish, to hold 1,000 cards, 4 by 6; lock and key; guide cards. (e.) *Writing Table*.—Oak finish, with drawer and lock; size, 20 by 30.

(f.) *Chair*.—Oak to match table. (g.) *Couch*.—Flat frame oak, canvas adjustable top.

(h.) *Mirror*.—Size 2½ by 3, set over bowl.

HIGH SCHOOLS.

CLASS-ROOMS AND RECITA- TIONS-ROOMS.

(1.) High school class-rooms are laid out for classes of thirty-six or forty-two, generally the latter. A room, 26 feet by 32 feet, will accommodate forty-two high school desks. The larger class-rooms are to accommodate from sixty to eighty pupils; the larger number can be accommodated in a room 33 feet 8 inches by 43 feet. Recitation-rooms, which to a certain extent will be used also as class-rooms, should be about 16 by 26. These rooms, if equipped with continuous desks and seats as in a lecture-room, or with double desks, such as are to be used in the Charlestown High, would accommodate about thirty pupils each. Lay out desks in one room of each type on preliminary plans.

ASSEMBLY HALL. (1.) For a high school would not differ materially from that already described for elementary schools.

MASTERS' AND
TEACHERS'
ROOMS.

(1.) For accommodation of the principal there should be an outer office, that is, a waiting-room or reception-room, and an inner office; and rooms for both men and women teachers, which might well be concentrated in the neighborhood of the reception-room and the principal's room. The School Committee now have under consideration a change in the organization of high school teachers, which may require a modification of the arrangement of the offices.

CHEMISTRY.

(1.) *The Rooms in General Required.*—Laboratory, separate from lecture-room, may be used as recitation-room, but better to use lecture-room and keep laboratory free from desks and demonstration table. Lecture-room, separate from laboratory, but easy of access, may be used for recitation; in that case should have facilities for demonstration. Combined lecture-room for physics and chemistry admissible. Three rooms for administrative purposes, store-room for dry chemicals and apparatus, room for storage of liquid chemicals and preparation of reagents, which may also be used as a teacher's laboratory and an office. The total area of the laboratory and administration rooms should be about 1,200 square feet, and of the lecture room about 600 square feet.

CHEMICAL
LABORATORY.

(1.) *Size.*—Should accommodate a class of forty to fifty pupils, with apparatus. Accommodation for three such classes.

(2.) *Light.*—On two sides.

(3.) *Heating and Ventilation.*—On same basis as for class-rooms, but removal of gases should also be provided for by a hood, each compartment of which should be ventilated by 9-inch hole at top, venting into elbow or T of drain pipe, thence connected by drain pipe into main flue, in which should be a fan operated by a motor.

(4.) *Walls and Ceiling.*—Walls of brick ideal, but not generally feasible, except on outside walls; plaster walls painted in oils and ceiling of plaster, covered with water-resisting surface containing no lead. All woodwork to have natural finish, except tops of desks.

(5.) *Floor.*—Preferably of concrete; may

be of hardwood in narrow strips, filled in by asphalt; should slope very slightly between desks, interspaces again trending to common corner, which may be drained.

(6.) *Equipment.*—Working desks at right angles to greater length of room, in sections back to back between windows; sections movable when top is removed. Each section 21 feet to 24 feet 6 inches long, 2 feet wide, 3 feet to 3 feet 2 inches in height. Distance between double sections about 5 feet, same distance at least between ends of sections and hood, which should be opposite longer line of windows and at right angles to direction of desk sections. Other ends of sections near enough to wall to allow for drain at right angles to sections and under windows. Desks to be of ash or any durable wood, natural finish. Top of narrow pine strips, treated with aniline black and waterproof lead finish. Individual desks provided with 3 lockers and 3 sets of drawers each, each set of drawers operated by bar from locker, combination lock to fasten locker. Each double section of desks provided with soapstone sink, placed between sections and flush with section top, which should slope slightly to sink.* Sink 8 inches at least wide, and should begin within 1 foot of the end toward hood, depth here to be 6 inches, running nearly to other end, where depth should be 8 inches. Each pupil to have working space of 3 feet 6 inches by 1 foot 8 inches. Each double section of desks provided with shelf for reagents, running length of desk, 10 inches to 12 inches above desk, supported by metal standards at suitable intervals, of white wood, $1\frac{1}{4}$ inches thick, 9 inches wide, natural finish, covered with glass plates, $\frac{1}{4}$ inch thick, 9 inches wide, suitable lengths, clamped to wooden shelf with as few clamps as possible. Wooden shelf at free end of each section, 1 inch to $1\frac{1}{2}$ inches thick, 3 feet to 4 feet long, not over 1 foot 3 inches wide, height of 2 feet 8 inches to 2 feet 10 inches, for holding blast lamps, reagent jars, etc. Finish off top of shelf in aniline black. Floor space under second row of windows taken up with line of extra desks, built like sections, furnished in

* Individual sinks are preferred by the teachers, although the long trough is apparently adequate for teaching elementary chemistry, and is less expensive.

similar way, but without necessarily a drain, to be used for emergency or general utility. Wall space not otherwise occupied may be used for shelves or cabinets. Fixed slate blackboards at end opposite second set of windows and parallel to desk sections, sliding slate blackboards above hood. Liquid waste may be thrown into desk sink, dry waste into earthen jars. Hood should run at right angles to desk sections and along wall opposite free ends of sections. In the construction of hood, protection against fire should be considered. Should be built against brick wall. Floor of hoods to be of slate; wood, inside and outside, to be finished natural. Space divided into 3 or 4 compartments, closed by sliding windows, Space against wall not occupied by hood for general link.

(7.) *Gas.*—Lead from gas main at free end of center of double desk sections, branch into 2 leads along back of each section. Take-offs between each working desk space in form of pillar with two $\frac{1}{4}$ -inch cocks, at each end desk a single cock. Two $\frac{1}{4}$ -inch gas nipples at each side of each compartment of hood. Cocks of these outside of hood. Wall desk fitted with single gas taps at intervals of 2 feet.

(8.) *Water.*—Lead from water main at free end of center of double desk sections. Size, large enough to fill section sink rapidly. Lead of ordinary size along length of section underside of shelf, take-off at free end of section, to which blast and suction pump may be attached. At junction of each four working desk spaces take-off, carrying two valves with hose bibb delivery $\frac{1}{4}$ -inch, the two valves or cocks facing opposite sides. Suction pump attached to these bibbs if desired.

(9.) *Drains.*—Section desk sink to have open drain and mercury arrester, into which should be set movable concave netting of wide mesh to arrest larger solid matter. Main desk drain at right angles to sections along and under windows, between windows and sections should be in form of wooden trough, in sections dovetailed from 6 inches to 8 inches inside diameter and equally deep, covered with asphalt paint or filling; may be supported on brackets against wall and left open, or covered and provided with movable top. Into this

drain will drip the lead pipes coming from section sink. Slate floor of each hood compartment should deepen slightly in center, where there should be a hole 1 inch in diameter, into which is fitted short lead drain pipe, closed by perforated plug; drain pipes to be connected with sloping drain pipe, open or closed, running toward and delivering into general sink.

(10.) *Electricity.*— Current of electricity on section desks need not exceed ten volts, may be supplied from source common to physical and chemical side. Plugs between each working space placed under desk top on frame.

(1.) *Size.*— Area to depend on number of seatings required or number of pupils in classes; should be large enough for two classes, and should occupy a position between the laboratories for physics and chemistry.

(2.) *Light.*— As much glass area as classroom, preferably from left. Fit windows and other openings admitting light with dark curtains as specified under Assembly Hall. Electric lighting from the top, controlled at point convenient to demonstration table.

(3.) *Floor* stepped up in fireproof construction and finished in wood, like floor.

(4.) *Heating and Ventilation.*— As for classrooms, with extra ventilation to remove fumes. Space at left end of desk provided with register and flue of at least 10 inches diameter, to afford means of down draught. Flue carried under floor to nearest wall, flue and draught actuated by motor, if not sufficient.

(5.) *Equipment.*— Demonstration table, not less than 12 feet long, not more than 3 feet nor less than 30 inches wide, height 32 inches. Placed 4 feet distant from wall, material same as that of room, top made of pine plank and finished like chemical laboratory desks. Pneumatic sink at right hand of desk, of soapstone in 2 depths. Not to exceed 30 inches long, 20 inches wide. Depth, 4 inches to 6 inches minimum; 16 inches to 18 inches maximum. Length of minimum depth not to exceed 60 per cent of total length. Sink to be depressed in table and provided with flush cover. Sink to have screened drain with mercury trap and overflow. Supply hot and cold water under reduced pressure and cold water under street

LECTURE AND
RECITATION—
ROOM.

pressure for quick filling, 2 goosenecks with $\frac{3}{4}$ -inch hose bibbs, to one of which combined blast and suction pump may be attached; steam supply direct from boiler main with a by-pass to summer boiler; supply gas air suction, and gas taps not exceeding 6 in number. Over demonstration table, secured to ceiling, provide a plank with heavy screw hooks. Behind lecture table provide sliding blackboards of not less than 50 square feet, and a canvas curtain on heavy spring roller for attaching charts. Drawers and closets for lesser lecture apparatus and chemicals in body of table, wall on either side provided with shelves for reagent bottles under glass, and side wall provided with cabinets for larger pieces of permanent apparatus, if there is no special room for this. Lifting seats with desk for taking notes arranged on platforms, so that the successive tiers will rise one above the other to insure an unobstructed view of demonstration table. (See drawing.)

(6.) *Electricity.*—Provide three (3) forms of current, viz., one circuit for direct current at 110 volts, 30 amperes, and one circuit for 5 to 20 volts, 50 amperes, and one circuit for alternating current at 110 volts, 30 amperes. Regulating rheostat for the 5 to 20 volt direct current to be located conveniently to table. A 50-ampere ammeter and a 125-volt voltmeter, both with extra large illuminated dials, mounted on swing brackets in full view of class and instructor; suitable means for switching ammeter and voltmeter to either circuit. Terminate circuits in nonreversible push plug receptacles. A projection lantern and receptacles for same at end of table and at rear of room. Lantern screen on spring roller at side of room, width of screen usually 12 feet, but dependent on distance and lenses used.

ADMINISTRATIVE
FACILITIES.

(1.) *Apparatus Store-room.*—Should give ample space for storage of extra and reserve apparatus and original packages of stock chemicals. These should be kept in dust-proof cabinets with glass doors and in drawers.

(2.) *Preparation-room.*—This should adjoin the above. Primarily for storage of liquid chemicals in bulk and preparation of liquid reagents, and storage of supply bottles, also fitted for teacher's laboratory. Should have wide center table with gas in center,

working desks, with drawers and closets along two sides, also gas, water, sink, blast, suction, steam and electricity. Shelves along desks for storage of liquid chemicals, supply bottles and smaller reagent bottles. An adequate hood should be provided.

(3.) *Office and Balance Room.*— Adjoining store-room and preparation-room should be small room to contain desk, book shelves, table and a good grade balance.

PHYSICAL
LABORATORY.

(1.) *Size.*— In a space about 30 by 40 feet. A laboratory, apparatus-room and shop.

(2.) *Light.*— The same basis as for class-rooms, one wall having as direct a southern exposure as possible for *porte lumiere* studies. Artificial light as in a class-room. Dark curtains in addition to regular shades for darkening room. Windows and all openings admitting light fitted as specified under Assembly Hall (p. 88).

(3.) *Heating and Ventilation.*— On same general basis as for class-rooms.

(4.) *Equipment.*— Small laboratory tables to accommodate two or four pupils at each, built of hard wood, white pine tops, fitted with 4 drawers, supports and adjustable cross-bar. Wall tables around room on sides where there are windows, with one or two shallow drawers under, but not deep enough to interfere with comfort of pupil. Soapstone drip sinks with cold water to be provided at these tables, one to every six or eight pupils. Instructor's table, fitted with hot and cold water, Richards' pump, numerous cupboards and drawers of various depths and widths. Two-inch plank bolted to ceiling over this table, with space of 2 or 3 inches between plank and ceiling for attachment of pendulums and other apparatus. Provide electric outlet for stereopticon and screen for same.

(5.) *Furniture.*— Provide adjustable stools for all the tables and a sufficient number of tablet arm chairs to accommodate the entire division during demonstration exercises. Chairs to be placed in rectangle formed by pupils' tables and demonstration table. These are not in building contract, but to be laid out on preliminary plans.

(6.) *Electricity.*— One outlet for direct current at 110 volts E. M. F. and 30-ampere capacity. One outlet for direct current at low

voltage with regulator conveniently located. One outlet for alternating current at 110 volts E. M. F. and 30-ampere capacity. One outlet for each kind of current at demonstration table, to be single pole push plugs instead of binding posts. Series and multiple connections at each pupil's table. Switch in laboratory to cut out pupils' tables.

(7.) *Gas.*—Pupils' tables to be equipped with gas, 4 cocks to each table. Wall tables to be equipped with gas. Demonstration table to be provided with gas.

(8.) *Bulletin Board.*—25 to 50 square feet of bulletin board, covered with burlap, secured at edges, but not glued on like wall paper.

(9.) *Blackboards.*—As much blackboard space as possible. Sliding blackboards back of demonstration tables.

(1.) *Size.*—One large or several small rooms, to open directly out of laboratory, and connected with lecture-room.

(2.) *Equipment.*—To be fitted with dust-tight cases with adjustable shelves and sliding glass doors, 7 feet high; cabinets of drawers of various widths and depths, mostly narrow and shallow. Some of these cases may be in the laboratory if there is sufficient wall space. A small sink and hood should be provided.

(1.) A small shop is desirable, though not absolutely necessary. This should be equipped with work bench, power lathe, belted to motor generator, and shelving for tools and stock, and may be set up in apparatus-room.

(1.) *Size.*—In a space about 30 by 40 feet. Laboratory and apparatus-room.

(2.) *Light.*—Windows the same as for class-rooms, one wall with southern exposure. Artificial light as in class-rooms.

(3.) *Equipment.*—(a.) Twenty-one pupils' tables, 54 inches by 24 inches by 30 inches high, each to accommodate two pupils, to have plate glass tops.

(b.) Soapstone sink, 72 inches by 30 inches, 10 inches deep, accessible on all sides. Supply with cold water, about 8 bibbs and 2 hose bibb cocks.

(c.) One aquarium, 30 inches long, 20 inches wide and 20 inches high, with supply, gooseneck cock with aspirator and standing waste.

APPARATUS
ROOMS.

SHOP.

BOTANICAL AND
ZOOLOGICAL
LABORATORY.

GYMNASIUM
AND DRILL
HALL.

(d.) Ice chest, 36 inches by 24 inches.

(e.) Cases built wherever practicable. Three sections to contain 42 pigeonholes, 3 inches by 3 inches by 8 inches, for storage of instruments. A liberal supply of cases to contain drawers and cupboards in lower compartment, and shelves above for exhibition of specimens, storage of material, instruments, books, charts, etc.

(4.) *Furniture.*—Forty-two adjustable screw revolving chairs, not in building contract.

(1.) To be used in common for gymnasium exercises, athletic games and the drilling of the school cadets. On account of its size and for structural conditions, to be generally located in the basement, with clear span of ceiling and combined height of basement and first story. Visitors' gallery generally provided at one end, entered from first floor.

(2.) *Size.*—The classes exercising in the gymnasium are from fifty to one hundred, and a suitable floor space for this number, as well as floor space for a full company of cadets at drill, is from 3,750 to 4,000 square feet. The height should not be less than 24 feet.

(3.) *Light.*—Ample outside light in all cases. Electric light from ceiling protected with wire guards.

(4.) *Heat and Ventilation.*—The former sufficient to guarantee a temperature of about 60 degrees, and about twice as much ventilation as is customary for the ordinary classroom. This is, of course, insufficient for the number of people who might occasionally occupy the gymnasium for exhibitions, but it is more than enough for the ordinary number using it for class exercises.

(5.) *Equipment.*—The standard gymnastic apparatus consists of the following fixtures, which may be slightly modified in particular cases:

- 25 Bar stalls.
- 25 Bar stall benches.
- 4 Double booms.
- 4 Saddles.
- 20 Vertical ropes.
- 2 Inclined ropes.
- 2 Rope ladders.
- 5 Serpentine ladders.
- 2 Vertical ladders.
- 3 Horizontal ladders.
- 2 Boxes, 1 horse, 1 buck.

- 12 Balance boards.
- 2 4 by 7 mats.
- 2 5 by 10 mats.
- 4 Pairs jumping standards and ropes.
- 4 Inclined planes.
- 6 Traveling rings.
- 1 Pair basket ball goals.
- 3 Basket balls.
- 4 4-lb. medicine balls.
- 16 2-lb medicine balls.
- 24 Small rubber balls, $2\frac{1}{2}$ to 3 in. in diameter.
- 8 Indoor baseballs.
- 1 Fairbanks scale.
- 1 Water spirometer.
- 1 Tape measure.
- 1 Dozen glass mouthpieces.
- 24 Bean bags.
- 1 Truck to carry mats.
- 1 Storming board.
- 6 Pairs $1\frac{1}{2}$ -lb. Indian clubs.
- 40 Pairs $\frac{3}{4}$ -lb. Indian clubs.
- 8 Chest weights.
- 1 Horizontal and vaulting bar.
- 1 Pair parallel bars.
- 2 Jump boards.
- 1 Shoulder caliper.

(6.) *Gun Racks.*—Racks for holding the guns carried by the cadets should be provided on wall. These racks should be protected by locked doors.

(7.) *Special Rooms.*—Adjoining gymnasium and drill hall two small rooms about 10 feet square should be provided for school matron and director of gymnasium.

(8.) *Dressing Rooms, Baths and Lockers.*—
 (a.) *System.*—The clothing of all the pupils is in a central locker-room, each suit being numbered, and all being under the control of the attendant in charge. Dressing-rooms are provided in number equivalent to the number of a class. A class coming for exercise are given their gymnasium clothing and keys to dressing rooms, which they lock behind them when exercising. After exercise they can take a shower bath. When dressed the dressing-room keys are given up, but the gymnasium clothing is left to be gathered up by the attendant. The clothing is carried to the dry-room, and when dried each set is put back in its proper pigeonhole.

(b.) *Lockers.*—The locker-room is controlled by the attendant, and contains pigeonholes, 10-inch cube, one for each pupil in the school, and a counter over which to deliver the

clothing. Adjoining this is the dry-room, capable of being heated to a high temperature and thoroughly ventilated. This is fitted with hooks and clothes line.

(c.) *Dressing-rooms.*—The dressing-rooms are small cabins, about 3 feet square, with a locked door, a seat and hooks.

(d.) *Showers.*—The shower baths are 3 feet square, divided by slate partitions, similar to those for water-closets, each having a bar at the front, over which a cotton sheet can be dropped. Each compartment has two sprays in opposite corners.

There should be space in one or more rooms for free-hand drawing, mechanical drawing, woodworking and metal-working.

(1.) *Size.*—The space should be about 3,000 to 3,600 square feet. The free-hand drawing-room should be preferably divided into two drawing-rooms, with a work-room between.

(2.) *Light.*—Windows and artificial light, by special fixtures. North light preferable in the drawing-rooms.

(3.) *Floors.*—Of wood.

(4.) *Walls.*—As in a manual training room.

(5.) *Ceilings.*—As in a manual training room.

(6.) *Heating and Ventilation.*—Same as in class-rooms.

(7.) *Stock-room.*—The lumber stock-room should contain at least 80 square feet, preferably long and narrow. Two 18-inch shelves should run around the room, 5 feet 6 inches and 6 feet from floor.

(8.) *Teachers' Closets.*—Teachers' closet in woodworking room should be large enough to be used for storage of finished work, and should be fitted with all shelving possible, as well as with the customary coat hooks. An area of 40 square feet is adequate.

(9.) *Fittings.*—(a.) Bookcases, like those in class-rooms, 150 capacity.

(b.) *Cases.*—For work in process, extra tools, supplies, drawing boards, models, paper, finished drawings, etc. (For all of these, see drawings.)

(c.) *Display Boards.*

(d.) *Sink.*—A 5-foot sink, with hot and cold water.

HANDICRAFT ROOMS.

(10.) *Equipment of Free-hand Drawing-room.*—Provide accommodation for five divisions, each class about twenty-five pupils.

(11.) *Equipment for Mechanical Drawing-room.*—(See Fittings.) Also 12 double drawing tables, 7 feet 4 inches by 2 feet, with drawers for instruments.

(12.) *Equipment of Woodworking Room.*—Provide accommodation for four divisions, each class about 20 pupils; 20 benches, 36 inches by 18 inches, fitted with 2 vises, one to be a quick action, iron vise, 3 speed lathes, 1 jig saw, 1 circular saw.

(13.) *Equipment of Metal-working Room.*—Six double benches, 8 feet by 2 feet, fitted with 12 Prentiss iron vises, 3½-inch jaw; wall bench, fitted with 10 stations, tool drawers and 5 Bower's tool holders; one ¼-inch gas hose cock terminal above each bench station; 2 gas blast burners, 1 large, 1 small; metal-covered bench with ventilated hood; 1 muffle furnace, ventilated; 1 drill; 1 forge, ventilated; 1 anvil; 1 grindstone; 1 table tool rack; 1 pair bench shears; 1 engine lathe.

(14.) *Motor.*

HOUSEHOLD
SCIENCE.

(1.) *Size.*—The space should be about 1,200 square feet, and should accommodate the kitchen, two small rooms for showing the care of a dining-room and of a bedroom, and a china closet and pantry.

(2.) *Light, Heat, etc.*—The same as that for other rooms, with additional ventilation in the kitchen.

(3.) *Equipment.*—The kitchen to contain the same equipment as that for grammar school cooking-rooms, but for 24 stations only; a kitchen pantry fitted with shelving and a china closet fitted with a sink; drawers, cupboards and shelves inclosed with glass doors. The dining-room and bedroom simply finished rooms, having no equipment except the furniture.

LUNCH-ROOMS.

(1.) *In General.*—The lunch-rooms in Boston schools have usually been located in the basement, and where these are high and well lighted this location seems to serve satisfactorily. They should, however, have the special ventilation that is provided in a basement cooking-room. In size, they should

accommodate comfortably, seated at benches or small tables, that proportion of the pupils in the school which take advantage of the luncheon facilities.

(2.) *Equipment.*—(a.) The counter should be set at 2 feet 8 inches high, and should have a rail 2 feet from it, with openings at intervals, to keep children in single file, and there should be accommodation under the counter for dishes.

(b.) *Range.*—A six-hole gas range, with ample oven space.

(c.) *Sinks.*—Two good-sized soapstone sinks.

(d.) *Ice Box.*—Of sufficient size to take care of milk supply.

(e.) *Lockers.*—Sufficient to care for the clothing of the attendants, and for mops and brooms, etc. These should not be under the counter, or near any place where food is kept.

(f.) *Furniture.*—In some cases the children are provided with camp chairs and small round tables to seat four. In others, ordinary school benches have been provided. Both seem fairly satisfactory in operation.

(1.) A space equivalent to a small classroom is ample for library purposes. The book accommodation will depend somewhat on the size of the school. The library is planned as a reading-room, that is, with the books in the room and not in a separate stack-room.

(1.) In high schools common wardrobes are — one for boys and one for girls — advised for all the clothing, situated on the lower floor to avoid bringing dirt into the upper floors. There being an attendant on the lower floor, the room, as a whole, can be locked up.

(2.) *Light.*—The rooms should have outside light.

(3.) *Heat and Ventilation.*—This should be thoroughly well heated and ventilated, similar to class-rooms.

(4.) *Equipment.*—The poles, hooks, etc., will be similar to those used in the other schools, but more space should be given the girls, *i. e.*, about 1 foot 6 inches on center. It has been found desirable to have some locked pigeon-holes, 20 by 20 by 12 inches.

LIBRARY.

WARDROBES.

HEATING, VENTILATION AND ELECTRIC SYSTEMS.

HEATING AND VENTILATION,
GRAVITY
SYSTEM.(1.) *Heat Ducts for School-rooms.*

(a.) *Location.*—In a corner room, locate the duct on the inside wall within 10 feet of the outside wall. In a room with one outside wall, locate the duct on the inside wall, near the middle.

(b.) *Size.*—Allow one square foot area of duct for each nine occupants. The opening into the room is to be the same area as the duct. The bottom of the opening is to be about 8 feet 6 inches above the floor. Galvanized-iron deflectors, painted to match the adjoining walls, will be placed in each opening. In addition, there will be a galvanized-iron ground around the opening.

(2.) *Vent Ducts for School-rooms.*

(a.) *Location.*—In a corner room, locate the duct at the inside corner of the room, and where possible on the same wall as the heat duct. In a room with one outside wall, the duct is to be on the same inside wall as the heat duct, and as near the middle as possible.

(b.) *Size.*—Allow about one square foot area of duct for each ten occupants. The opening into the room will be at the floor, and will be the full size of the vent duct. There will be no guard at the opening. The floor will be carried into the bottom of the duct, and the baseboard will be carried in and around. The inside of the duct exposed to view will be plastered and finished to match the adjoining walls.

PLENUM FAN
SYSTEM.(1.) *Heat Ducts for School-rooms.*

(a.) *Location.*—In a corner room, locate the duct within ten feet of the outside wall. In a room with one outside wall, locate the duct on the inside wall, near the middle.

(b.) *Size.*—Allow one square foot area of duct for each ten occupants. The opening into the room is to be one-third larger than the area of the duct. The bottom of the opening is to be about 8 feet 6 inches above the floor. Galvanized-iron deflectors, painted to match the adjoining walls, will be placed in each opening. In addition, there will be a galvanized-iron ground around the opening.

TOILET-ROOM
VENTS.WARDROBE
VENTS.ELECTRIC
WORK.(2.) *Vent Ducts for School-rooms.*

(a.) *Location.*—The location and size will be the same as those for the Gravity System.

(1.) *Duct.*—Allow 10 square inches of duct area for each closet and 8 square inches for each lineal foot of urinal space..

(2.) *Opening.*—Each door into the toilet-room is to have an opening either in the lower panel, with a register face on each side, or underneath the door. The net area through the opening in either case is to be equal to the area of the main vent duct from the room.

(1.) **Duct.*—Each wardrobe is to have a vent duct with an area of $1\frac{1}{2}$ square feet and having a register at the bottom of the room.

(2.) **Opening.*—The door leading into the wardrobe at the end farthest from the vent duct is to have an opening similar to that for a toilet-room, so that the air can pass from the school-room into the wardrobe and thence out through the duct.

(1.) *Service.*—This should enter basement underground at location to be determined by reference to street mains, and should terminate on a switchboard located in a fireproof closet, opening if possible into the basement corridor.

(2.) *Conduits.*—All wires to be run in iron conduit concealed, except conduits for mains in basement, and side outlets in boiler, engine and stack rooms. Tap circuit conduits to be run above rough floor wherever possible. If floor construction will not allow this, they are to be run below floor beams and above ceiling, a space of 2 inches being left in which they can be run.

(3.) *Wire Slot.*—Obtain from electrical division the location of slots and openings for conduits and panel boards.

(4.) *Cabinets.*—All cabinets to be furnished by wiring contractor, but finished by the general contractor.

(5.) *Cutting.*—All cutting and patching to be done by the general contractor.

(6.) *Outlets.*—Class-rooms to be provided with 9 four-light ceiling outlets, controlled by 3 switches. Wardrobes to have 1 ceiling outlet, controlled by switch in class-room. Corridors to be lighted from ceiling wherever possible. Height of side outlets in rooms to be 6

* This would be modified if the Chicago system of wardrobes is adopted.

feet and in corridors 6 feet 4 inches. Switch outlets to be 4 feet. Switches in corridors, play-rooms, and pupils' toilet-rooms to be operated by private key.

(7.) *Fixtures.*— Fixtures in class-rooms to be of special design to combine a direct and diffused light.

(8.) *Gas.*— Gas outlets to be provided in all corridors, vestibules, stairways, boiler-room and assembly hall exits; all except vestibule to be wall outlets. Gas-piping to be included in the electrical engineer's work.

(9.) *Stereopticon.*— All grammar schools and high schools to be provided with an electric projection lantern with reflectoscope attachment.

(10.) *Clocks and Bells.*— All schools to be provided with an electric system of clocks, operated by a master clock. All primary schools to be provided with a system of signal bells, operated by push buttons. In all grammar and high schools the bell system to be operated automatically by master clocks, according to prearranged programme.

(11.) *Telephones.*— In all schools, each class-room, hall, teachers' room and boiler-room to be connected to master's office, or to room occupied by the first assistant, by a telephone system.

NOTE.— Drawings showing special fittings for both plumbing and interior fittings will be found in Appendices XI., XII. and XIII.

APPENDIX VIII.

REPORT ON FIRE PROTECTION.

BOSTON SCHOOL COMMITTEE,
SECRETARY'S OFFICE,
Mason Street, January 17, 1906.

MR. R. CLIPSTON STURGIS,
Chairman Schoolhouse Commissioners,
120 Boylston Street, Boston:

DEAR SIR.—At a meeting of the School Committee, held on Monday, January 15, a communication was received from Mr. Benjamin W. Wells, fire commissioner, transmitting copies of reports made to him by the district chiefs of that department on their inspection of school fire drills, and an order was passed by the Board that a copy of the reports referred to be transmitted to the Board of Schoolhouse Commissioners with the request that the suggestions contained therein be given due consideration and attention.

Inclosed please find copies of the reports referred to.

Very truly yours,
THORNTON D. APOLLONIO, *Secretary.*

CITY OF BOSTON,
SCHOOLHOUSE DEPARTMENT, January 19, 1906.

To the School Committee:

GENTLEMEN.—I beg to acknowledge your communication of January 17, inclosing the report of the district chiefs of the Fire Department.

The matters referred to in this report have, as you are aware, been previously brought to the attention of this Board, and for the past four years the Board have been steadily taking up the most urgent cases and attending to these as rapidly as the funds at their disposal would permit. Each year in their annual report the Board have stated what has been done. In 1901 the Board's first step was to put in fire extinguishers. In 1902 they erected two fire escapes and put in the auxiliary fire-alarm system in seven schools. In 1903 eighteen schools were equipped with fire escapes and in 1904 seven schools were equipped with fire escapes, eight schools were equipped with the auxiliary fire-alarm system, thirty schools had the outside doors changed to open out, and fire extinguishers were installed in a very large number of the older schools. In these four years the Board spent \$46,044.68 on fire protection.

In the report of 1904 the Board of Schoolhouse Commissioners reported the result of interviews that they had held with Fire Commissioner Russell and with the district chiefs, from which it appeared that the Board held an opinion differing from the chiefs in regard to the reason for putting on fire escapes. The Board had supposed that the fire escapes were intended primarily for the children to use in case of danger, and, with this in mind, had thought that the spiral fire escape, known as the Kirker-Bender, was the safest means of taking children out from a burning building. Commissioner Russell and his chiefs pointed out that, in their opinion, the danger of fire in a school building when it was in session was extremely

small, owing to the fact that the building was full of people, all of whom were awake. Under these circumstances it seemed almost impossible that a fire, even if it started, should gain any headway whatsoever. In case of an alarm and danger, or even the appearance of danger, such as might be caused by a volume of smoke, Commissioner Russell stated that the stairways, the regular means of exit, should always be used up to the last moment that they were available, and that never, except in cases of extreme emergency, and then only under the direction of the fire chiefs, should outside fire escapes be used by children.

For this reason the Fire Commissioner advised that the outside fire escapes should be in the form of staircases, which could be used by the firemen to take their hose up on the outside of the building.

The Board of Schoolhouse Commissioners accepted the advice of the Fire Commissioner as being eminently wise and practical, and have since then installed that form of fire escape which the Fire Commissioner approved, and have also, with the advice and approval of the commissioner, proceeded to take up and complete as rapidly as funds would permit the fireproofing of the basements of the old schools, particularly that portion which adjoins either furnaces or boilers.

By the act establishing this Board (Chapter 473 of the Acts of 1901), authority was given to employ a portion of the proceeds of the loans for fire protection and during these four years money was set aside from the loans for this purpose. In 1906 all the expenses in connection with fire protection will have to be taken from the general fund for repairs. It is to be borne in mind that since 1901 no increase has been made in the appropriation for repairs, except such as comes from the increased taxation value of the city, but during these four years the Board have erected new buildings to the extent of over four millions of dollars, on all of which repair is necessary to keep them up to the standard, and that by the Act of the Legislature, May 25, 1904, the expense of this department was charged against the repair fund, adding \$25,000 to the fixed charges per annum, and that consequently the Board will be unable to take up as rapidly as they would wish the more complete fire protection of the older buildings.

Short of complete rebuilding, it is impossible to make the old second class buildings really safe, and the Board believe that it is a greater protection to the children to have the heating apparatus carefully safeguarded, so as to prevent the spread of fire from the basement to the upper portion of the building, than it is to erect fire escapes, but as fast as their funds permit they propose to carry out both of these methods intended to add to the safety of the children who are necessarily housed in the older buildings.

I am, respectfully yours,

R. CLIPSTON STURGIS, *Chairman.*

P. S. The Board have not as yet had an opportunity for a conference with Fire Commissioner Wells and his district chiefs, but believe him to be substantially in accord with the position taken by the late Commissioner Russell.

CITY OF BOSTON,
OFFICE OF THE MAYOR, March 10, 1909.

To the Board of Schoolhouse Commissioners:

DEAR SIRS,—During the past few days several articles have appeared in the daily press containing criticisms of conditions obtaining in many of our schoolhouses with regard to fire escape facilities. Several of the allegations made are of such a character that they would seem to demand the attention of your Board, and I wish you would, at the earliest possible date, furnish me with a detailed statement of any changes that the city should make in any schoolhouse facilitating escape in case of fire.

Yours respectfully,

G. A. HIBBARD, *Mayor.*

BOSTON, March 18, 1909.

HON. GEORGE A. HIBBARD,
Mayor of Boston:

DEAR SIR.—The accompanying statement, compiled from our records, of the schools and brought to date, deals only with conditions that affect the safety of the children and these are divided into two heads: (1) the prevention of fire; under this head comes (a) the safeguarding of the basements, especially about the heating apparatus, where fire is most likely to occur, and (b) the protection of the upper stories, in case fire started in the basement, by the elimination of wood vent ducts, which might carry fire rapidly from floor to floor; and (2) the provision of proper means of exit in case of fire. This would include (a) clear corridors, free from obstruction, proper and safe doors; (b) a sure system of fire drill alarm, and, (c) as a last resort, for the buildings having the poorest corridors and stairs, fire escapes outside. These, in the opinion of the Fire Department, should be looked upon always as an emergency, although the best form of the inclosed outside staircase can, under proper supervision, be used as a regular means of exit for the children. The accompanying list seems a long one. It is inevitable in a city like Boston, which has been caring for its school children for so many years, that there should be a large number of buildings not up to the modern standards of perfect safety. We have at present 31 fireproof buildings, 148 of second class construction, that is, of fireproof material outside, 49 of third class construction, that is, built of wood, and 96 portable, one class-room buildings, with the heat in the room.

We ought to replace some of the old buildings by new, rather than to spend a large amount of money in attempting to improve their conditions, and the Board has avoided as far as possible expensive repairs on such buildings.

Although the list is therefore a long one, the repairs and improvements suggested are rather in the nature of wise precautions than of changes essential for the protection of the lives of the children. The sum of \$15,000 would probably complete all the matters mentioned as major basement repairs, and \$12,500 would probably cover the minor repairs to doors, ceilings, partitions, etc. The repairs to upper stories (b) is a more serious expense, as it means going up through the buildings. Where wood ducts serve as ventilators from floor to floor, they are a grave menace in case a fire started, on account of the facility with which it would be carried from floor to floor. There are fifty-four buildings having such ducts. To remedy the defects in these fifty-four schools would cost, in my judgment, from \$75,000 to \$100,000.

Under (2) Proper Means of Exit, (a) includes small matters such as clearing corridors of furniture, etc., T-handle in place of flush bolts, changing the swing of some interior doors, removal of porches, additional exits, etc.; (b) relates to the fire-alarm drill, a matter, in the judgment of this Board, of extreme importance. It will, perhaps, make matters clearer to state the conditions existing when this Board was established. There was no uniform system for giving the signal for fire alarm. Some buildings had mechanical bells, some electric. Some of these latter were equipped with special fire signals on each floor, not for fire drill, but for actual fire signals, and the buildings that had just been finished by the School Committee, and presumably represented their policy, had the auxiliary system for giving alarm to the Fire Department, but depended on the program clock and the telephone communication between rooms for fire drill. This latter system the Board followed until this year, when they decided to dispense with the auxiliary system and to install uniform automatic fire drill signals to ring the call that had been decided on by the School Committee, as noted in their minutes of September 17, September 24 and October 1, 1906.

Before any actual steps were taken for installing this system the matter was referred by your Honor to the Finance Commission and they reported to you on March 16. Owing to the thoughtful study given to this matter by the special committee of the Finance Commission, the Board believes

that it can install a system which shall combine the advantages of direct communication with the Fire Department, as well as the automatic fire drill signal. To equip buildings over five rooms in size, and not now equipped with program clocks, would cost about \$15,000. If, in addition, it is thought necessary to equip program systems with special fire calls, it would cost about \$10,000 more, and if, in addition, the small buildings were equipped, it would require \$15,000 more,—\$40,000 in all. I inclose copy of our electrician's statement on this subject.

(c) Contains a list of twenty-seven fire escapes required, which would cost to erect about \$30,000, and various additional outside exits on wooden buildings would cost \$2,500. The total of all these proposed improvements would therefore be in the neighborhood of \$200,000.

I am, dear sir,

Your obedient servant,

R. CLIPSTON STURGIS,
Chairman.

APPENDIX IX.

REPORT ON HEATING AND VENTILATING.

The duty of the Heating and Ventilating Division consists primarily in the preparation of plans and specifications for installing heating and ventilating apparatus in all new and old buildings, as well as the superintendence of the work when under construction.

In addition to this the division is responsible for the repairs upon every sort of heating apparatus in the schools. Immediately after the close of the heating season a thorough examination is made of each piece of apparatus, after which plans and specifications are drawn up, covering such items as the retubing and resetting of boilers, the cleaning and repairing of stoves and furnaces, and the replacement of radiators, piping and other worn-out parts. During the summer vacation, while the repairs are being made, a thorough and systematic inspection is maintained, thereby insuring first-class work.

A periodical examination is also made of the automatic control apparatus, and all repairs upon the same are made by an inspector in the employ of the department.

All complaints of lack of heat, as well as failure to secure satisfactory results, arising from faulty apparatus or improper management, are thoroughly investigated and the proper remedy suggested.

From February, 1909, to February, 1910, the amount of work on new buildings, carried on by this division, amounted to \$88,818, while the repair work reached a total of \$55,501.98.

The radiating surface in many of the older buildings is insufficient even to warm the rooms, and is wholly inadequate to maintain the present standard of ventilation. The warm air and vent flues are restricted in area. The boilers are not large enough, and in zero weather require forcing. This becomes even more difficult on account of the small chimneys which are usually found in the buildings. The department is confronted by two problems—first, the replacement of those boilers which are either unsafe or have outlived their usefulness; and, second, the renewal of the remainder of the apparatus. In every instance where new boilers are installed they are made of sufficient size to take care of a modern system. Provision is also made to secure proper draft, generally by the construction of a new chimney, and advantage is taken of the opportunity

to fireproof thoroughly the boiler and coal rooms, as well as the staircase wells, thus reducing the fire risk to a minimum. In view of the large number of boilers some fixed policy must be adopted of retiring systematically each year those which have reached the point where further use is inadvisable. By setting aside yearly a certain appropriation to take care of this work, it will be possible to keep pace with the deterioration instead of being suddenly confronted with a very large amount of work and insufficient funds to meet it.

This question of boiler replacement was first given serious consideration in the summer of 1908, when, acting upon the advice of the Hartford Steam Boiler Inspection and Insurance Company, eight new boilers were installed in five schools. Last year sixteen boilers were replaced in nine schools.

Placing the age limit of all boilers at twenty-five years, it is a simple matter to forecast what renewals are necessary in the succeeding years, and also to estimate the probable cost of the work. The following table contains a list of schools in which the boilers should be renewed during the next five years, on the basis given above:

SCHOOL.	No. Boilers.	Type.	Present Age of Boiler.	Should be Renewed in Summer of
School Committee Rooms...	1	Return Tubular ...	34 years	1910
Polk Street.....	1	Cast-iron Sectional.	33 years	1910
* F. W. Lincoln.....	2	Cast-iron Sectional.	30 years	1910
* Joshua Bates.....	1	Return Tubular ...	30 years	1910
Benjamin Pope.....	1	Return Tubular ...	27 years	1910
Brimmer.....	2	Cast-iron Sectional.	27 years	1910
* Everett.....	2	Cast-iron Sectional.	27 years	1910
* Hancock.....	2	Cast-iron Sectional.	27 years	1910
* Howard Avenue.....	1	Return Tubular ...	27 years	1910
* Lowell.....	2	Cast-iron Sectional.	27 years	1910
* Comins.....	2	Cast-iron Sectional.	26 years	1910
Elbridge Smith.....	2	Cast-iron Sectional.	26 years	1910
Lucretia Crocker.....	1	Return Tubular ...	26 years	1910
Hyde.....	2	Return Tubular ...	25 years	1910
Kenilworth Street.....	1	Cast-iron Sectional.	25 years	1910
Rutland Street.....	1	Cast-iron Sectional.	25 years	1910
Atherton.....	1	Cast-iron Sectional.	24 years	1911
Bennett Annex.....	1	Cast-iron Sectional.	24 years	1911
Cushman.....	2	Cast-iron Sectional.	24 years	1911
Harris.....	1	Cast-iron Sectional.	24 years	1911

SCHOOL.	No. Boilers.	Type.	Present Age of Boiler.	Should be Renewed in Summer of
Hugh O'Brien.....	3	Cast-iron Sectional.	24 years	1911
Trade School for Girls.....	1	Return Tubular . . .	24 years	1911
Aaron Davis.....	1	Cast-iron Sectional.	23 years	1912
Minot.....	1	Cast-iron Sectional.	23 years	1912
Dudley.....	1	Cast-iron Sectional.	22 years	1913
Franklin.....	2	Cast-iron Sectional.	22 years	1913
Horace Mann.....	1	Return Tubular . . .	22 years	1913
Lyman.....	2	Return Tubular . . .	22 years	1913
Lucretia Crocker.....	1	Vertical Tubular . . .	22 years	1913
Samuel G. Howe.....	1	Cast-iron Sectional.	22 years	1913
Harvard Hill.....	1	Cast-iron Sectional.	21 years	1914
Thomas N. Hart.....	2	Cast-iron Sectional.	21 years	1914

Since the list for the summer of 1910 would place too large a burden upon the repair fund, the question of renewals was taken up with the boiler insurance company. A tentative list has been prepared, which includes the urgent cases, and those schools marked with a * will be taken care of first.

HEATING AND VENTILATING DIVISION,
CHARLES F. EVELETH, *Engineer.*

APPENDIX X.

ELECTRICAL DIVISION.

The duties of the Electrical Division include the preparation of plans and specifications of all electrical and gas work and the supervision of construction thereof, the care and maintenance of all electrical and gas apparatus, including electric lighting, gas lighting, motors, electric clocks, bells, telephones, fire alarm, and cooking apparatus.

The organization of the division includes an electrical engineer, two draughtsmen, one electrician on general repair work, one electrician on fire-alarm maintenance, and a clockmaker on maintenance of electric clocks.

NEW WORK.

During the year 1909 the Electrical Division has furnished plans, specifications and supervision for work amounting to \$66,757.92. The cost of this service amounts to \$2,735, or 4 per cent of the cost of the work. See footnote.*

MAINTENANCE.

The maintenance charges (including labor) for the year 1909 are as follows:

Electric light	\$1,445 93
Bell and telephone	3,585 31
Electric clocks	2,375 02
Fire alarm	2,490 52
Gas appliances	1,001 52
Total	\$10,898 30

This being the first year in which electric light, bell and telephone and gas appliance maintenance has been separately itemized, it is impossible to make comparisons with previous years.

*The sum of \$2,735 represents the net cost of labor of draughtsmen and inspector, and does not include such items as office rent, telephone service, stationery, etc.

The electric clock and fire-alarm maintenance, which has in former years been done by contract, is now done by employees of this division. The expense, as compared with the contract method, is as follows:

Total cost by contract (1908)	\$6,900	38
Total cost by this division (1909)	4,869	54

A charge of \$655.50 for new tools and equipment, and a charge of \$150 for maintenance brought over from last year, are included in the cost of work done by this division. The actual cost of maintenance should therefore be \$4,064.04, making a net saving of \$2,836.34. The number of clocks maintained during the year 1909 was also 17 per cent greater than the previous year, and an increase of 46.5 per cent was made in the number of buildings equipped with fire-alarm apparatus.

A detailed schedule of equipment is now being compiled and will be issued as a separate report.

ELECTRICAL DIVISION,

BENJAMIN B. HATCH, *Engineer.*

APPENDIX XI.

- STANDARDS - OF - GENERAL - DETAIL -

^ CITY ^ OF ^ BOSTON ^ SCHOOLHOUSE ^ DEPARTMENT ^

• BOOK • CASES •

SCALE $\frac{1}{2}$ " = 1 FOOT

STOCK PICTURE MOULDING AT CEILING.

UPPER MOULDING TO TAKE A PICTURE HOOK.

CARD RACKS OVER BLACK 'N' CARD 11" HIGH.

7" O-X 3" PANELLING DOORS GLASS PANEL.

SMALLEST POSSIBLE WOOD MOULDINGS.

WARDROBE DOORS 7'-0" X 2'-6" NO GLASS.

BURLAP 2'-2" TO 2'-4"

DRAWERS & CUPBOARD 1'-0" DEEP.

BOARD 1'-0" DEEP SHELF.

BURLAP 2'-2" TO 2'-4"

BOOK CASES FOR PRIMARY SCHOOLS.

ALL DOORS & DRAWERS TO LOCK.

STOCK PICTURE MOULDING AT CEILING.

HOLDING ALL AROUND ROOM TO TAKE A PICTURE HOOK.

7" O-X 3" PANELLING DOORS GLASS PANEL.

SMALLEST POSSIBLE ACROTRATES.

WARDROBE DOORS 7'-0" X 2'-6" NO GLASS.

BURLAP 2'-2" TO 2'-4"

DRAWERS & CUPBOARD 1'-0" DEEP.

BOARD 1'-0" DEEP SHELF.

BOOK CASES FOR GRAMMAR SCHOOLS.

SCALE 0 1 2 3 4 5 6 7 FEET

WARDROBE • FITTINGS.

PLASTER SCALE $1\frac{1}{2}$ " = 1 FOOT

MOULDING TO COVER JOINT.

12" POLE.

8" BRACKETS 3'-6" O-C.

CAST IRON BRONZE PLATED.

WARDROBE BRACKETS POLES & HOOKS.

9 HOOKS BETWEEN BRACKETS.

UMBRELLA HOLDER.

STEAM PIPES.

WIRE GUARD.

BRACKETS FOR HIGH SCHOOLS.

GRANITHIC BASE CUTTER.

12" TERRAZZO.

BRASS BRACKET.

5 HOOKS BETWEEN BRACKETS.

DETAIL OF CLOTHES POLES USED WHEN ALL SIDES OF WARDROBES ARE UTILIZED.

• COOKING • ROOM & FITTINGS •

SCALE $\frac{3}{4}$ " & $\frac{15}{16}$ " = 1 FOOT

14X16X 3/4" WHITEPINE WITH HARD MOULDING SCARFED WOOD ENDS.

GAS PIPE.

PANS BACKS VENIS.

COOKING BENCHES SCALE $\frac{3}{4}$ " = 1 FOOT

WINDOWS ON THIS SIDE.

WARDROBE.

DRESSER.

TEACHER'S CLOSET.

YARD.

SHelves.

PANTRY.

SOAPSTONE.

BIN.

WOOD.

WALL.

SHelves.

PLAN OF COOKING ROOM

SCALE $\frac{1}{8}$ " = 1 FOOT.

FEET 3 2 1 0

SCALE

• MANUAL TRAINING ROOM •

SCALE $1\frac{1}{2}$ " & $\frac{1}{8}$ " = 1 FOOT

WINDOWS ON THIS SIDE

TEACHER'S DESK

DEMONSTRATION BENCH

STOCK ROOM AREA 80 SQ FT OR MORE

CLOSET FOR FINISHED WORK

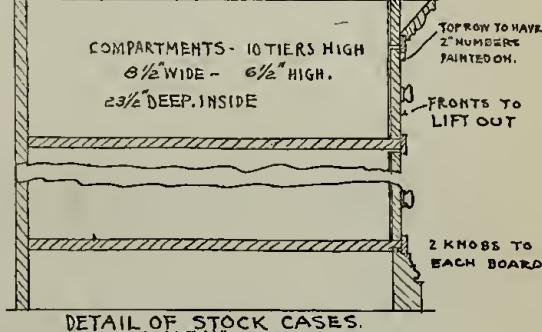
WARDROBE

STOCK CASES SEE DETAIL.

TEACHER'S CLOSET

PLAN OF MANUAL TRAINING ROOM SCALE $\frac{1}{8}$ " = 1 FOOT

SECTIONAL CASES OF 30 COMPARTMENT EACH



DETAIL OF STOCK CASES.

SCALE $1\frac{1}{2}$ " = 1 FOOT.

SCALE

• COOKING ROOM FITTINGS.

SCALE $\frac{1}{2}$ " = 1 FOOT.

ALTERNATE PLANS OF COOKING BENCH NO SCALE.

ADJUSTABLE SHELVES.

Glass.

Glass.

Glass.

ADJUSTABLE.

DRAWERS.

ADJUSTABLE SHELVES.

Glass doors.

ALL DRAWERS TO LOCK.

SECTION

ELEVATION OF DRESSER

ADJUSTABLE SHELVES.

Glass doors.

ADJUSTABLE SHELVES.

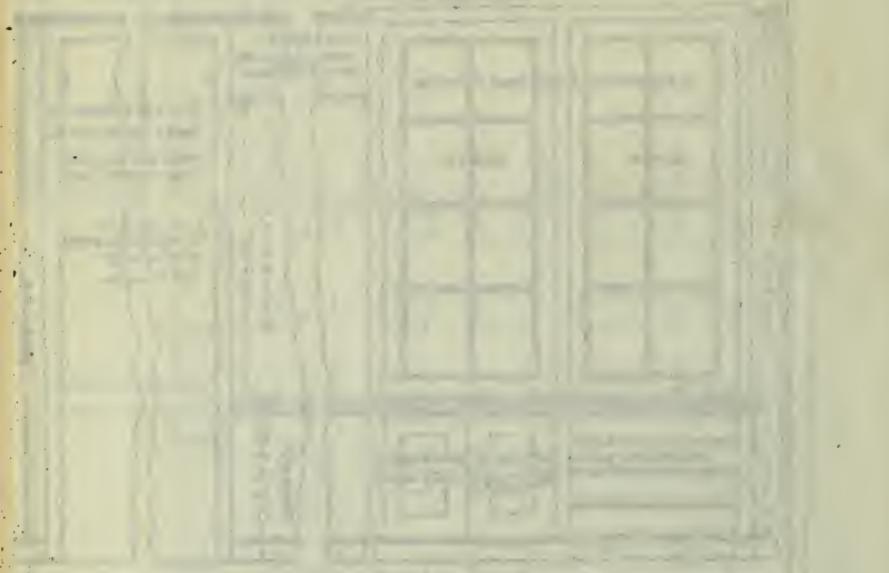
Wood.

WATSON - GEN

WATSON'S BOOK-CASES.

"BOOK-CASES."

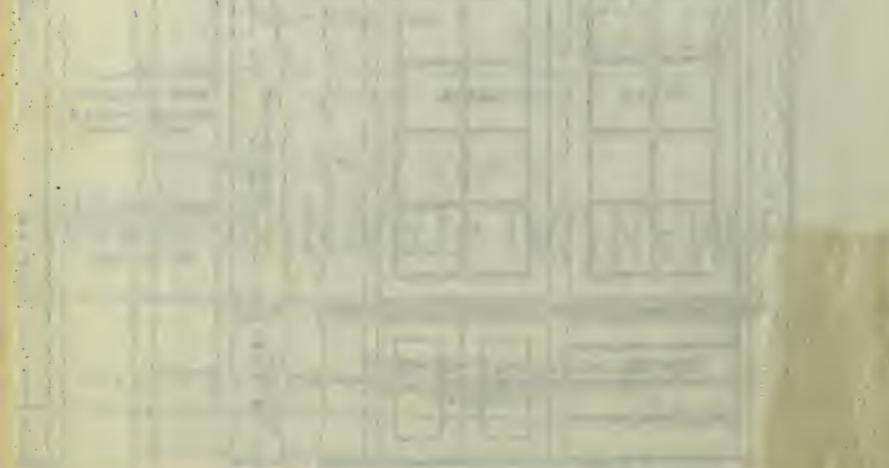
WATSON'S BOOK-CASES.



WATSON'S BOOK-CASES.

WATSON'S BOOK-CASES.

WATSON'S BOOK-CASES.



VATOR



BEVELLED
EDGE

• ELEVATION

• CORNER

• BOWL

ASS TRAP

IRON FLOOR

GROS
SELF
COCK

PLUG AND CHAIN

• SECTION

• C. I. PLU

BRASS
C. O.
IRON BOTTO

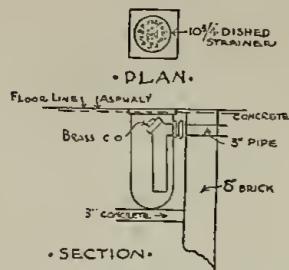
APPENDIX XII.

PLUMBING.

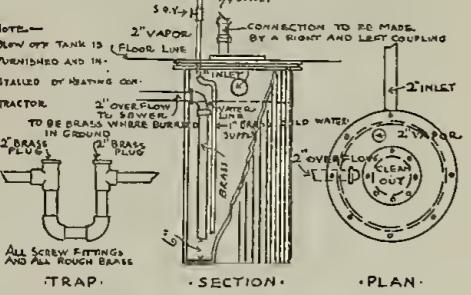
STANDARDS.

CITY OF BOSTON.
SCHOOLHOUSE DEPARTMENT.

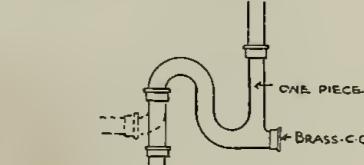
FLOOR WASH.



BLOW OFF TANK.

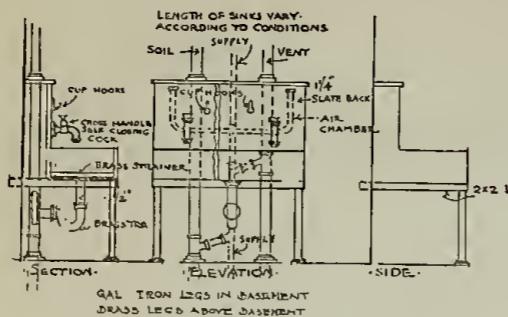


CONDUCTOR TRAP.

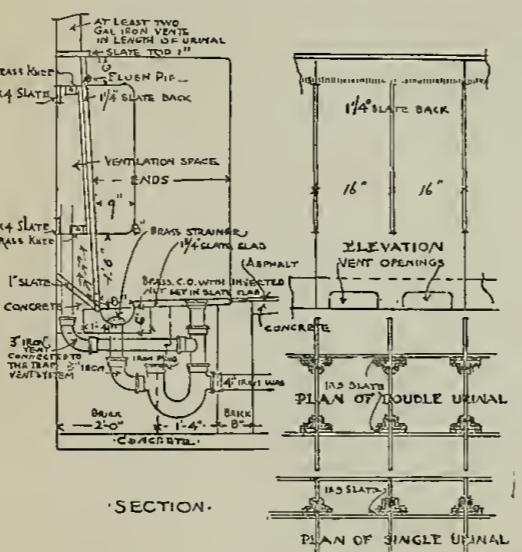


NO TRAP REQUIRED WHERE SEPARATE CONNECTION TO SURFACE DRAINAGE OCCURS.

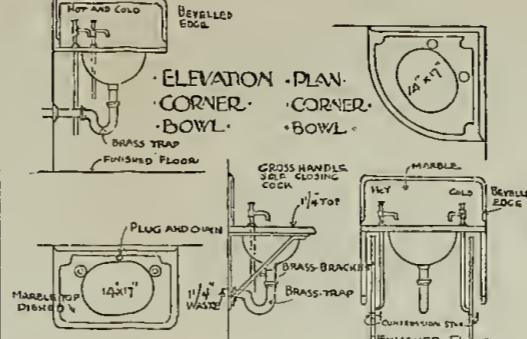
SLATE SINK.



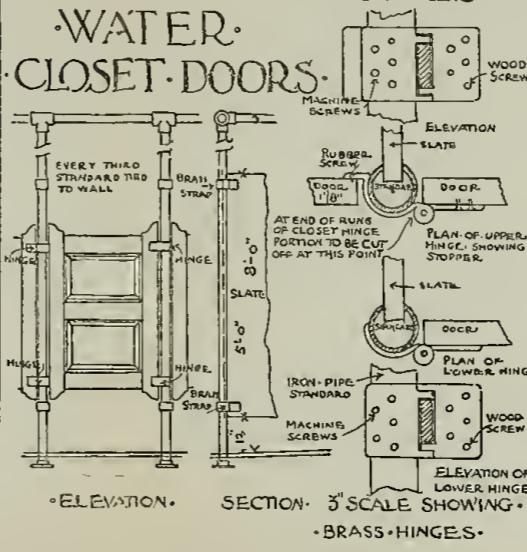
SLATE URINAL.



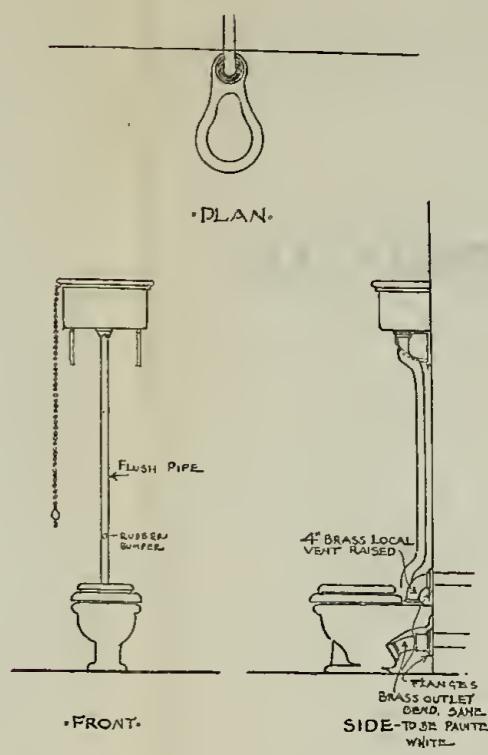
LAVATORY BOWLS.



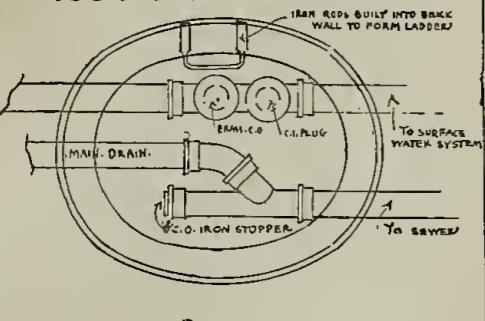
HINGES.



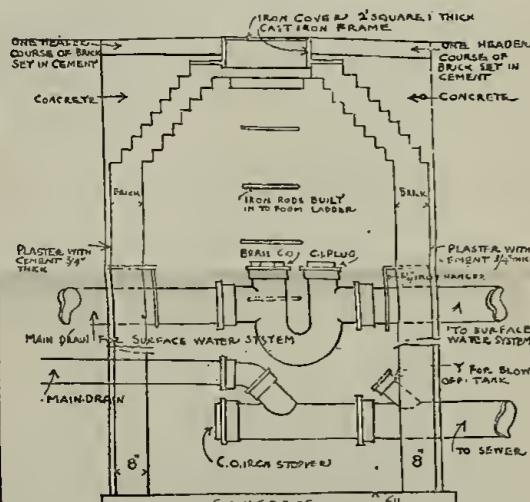
TEACHERS CLOSET.



RUNNING TRAP.

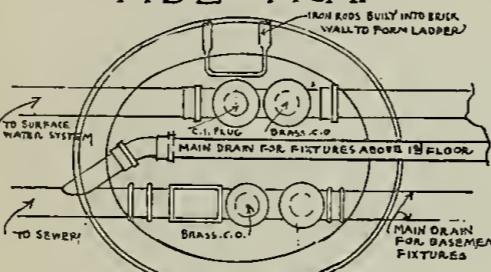


PLAN.

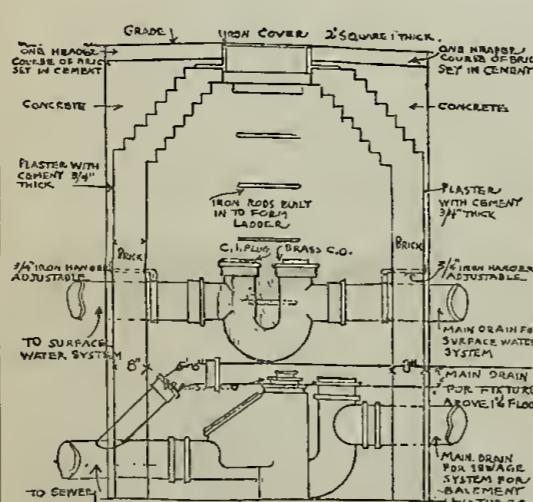


SECTION.

TIDE TRAP.

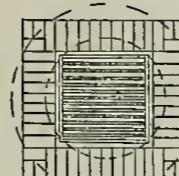


PLAN.

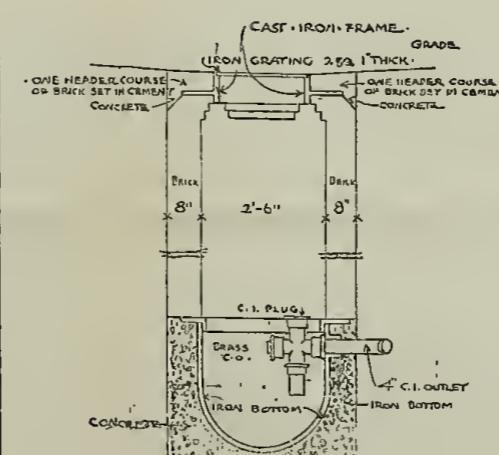


SECTION.

CATCH BASIN.

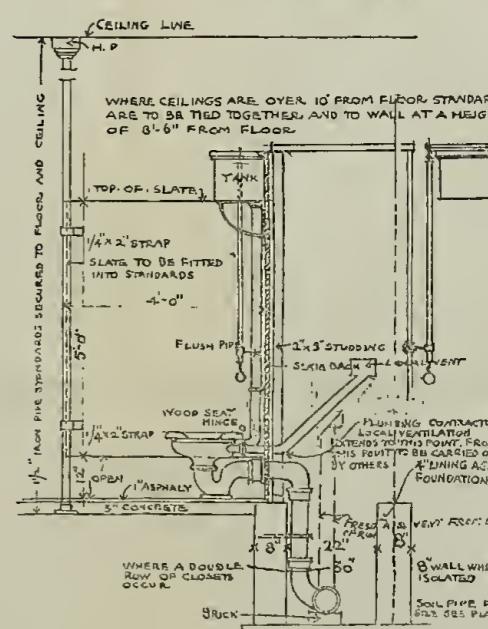
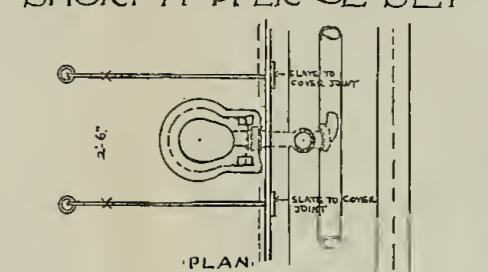


PLAN OF COYER.



SECTION.

SHORT HOPPER CLOSET.

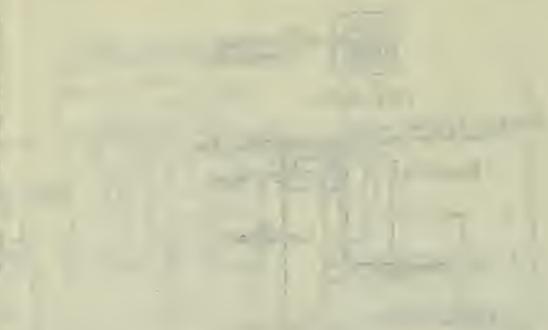


SECTION.

APPENDIX XIII.

PLUMBING

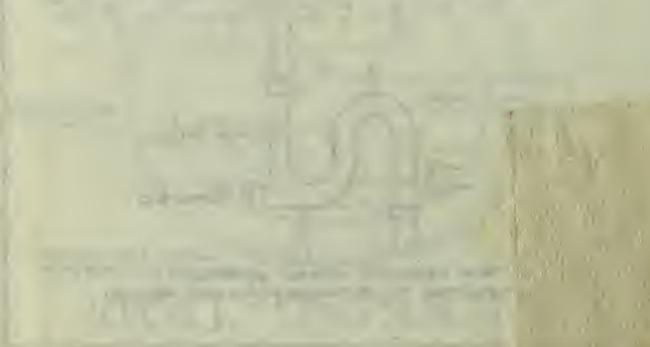
HEATING & AIR CONDITIONING



TRACTOR



AUTOMOBILE



TRUCK

H I G H.

SCHOOL.

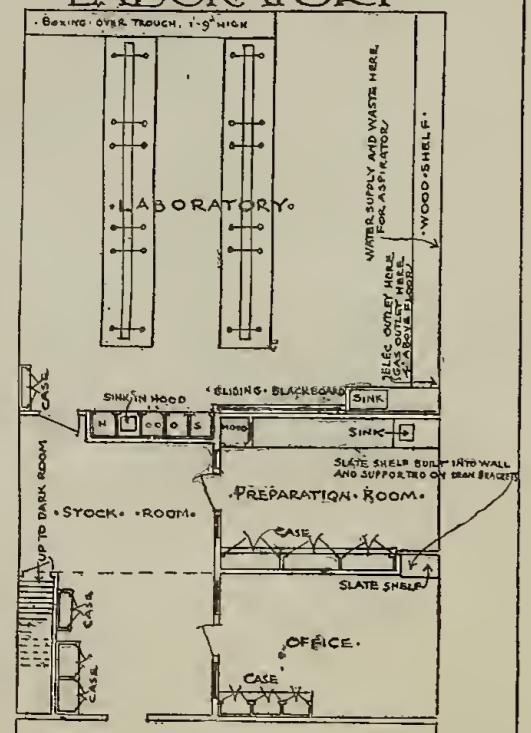
STANDARD.

FITTINGS.

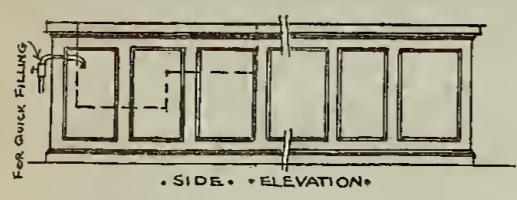
CITY OF BOSTON
SCHOOLHOUSE DEPARTMENT

CHEMICAL.

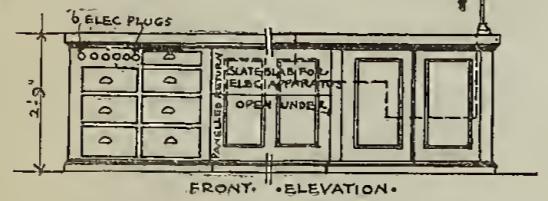
LABORATORY.



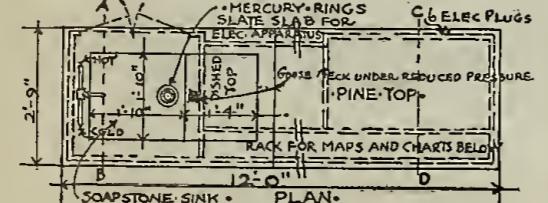
INSTRUCTORS TABLE.



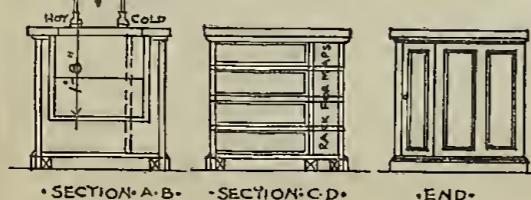
IN CHEMICAL.



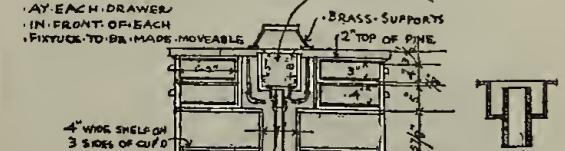
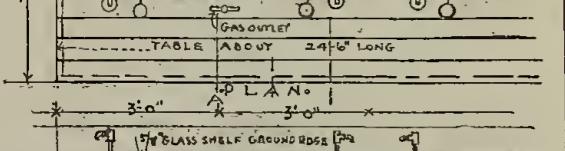
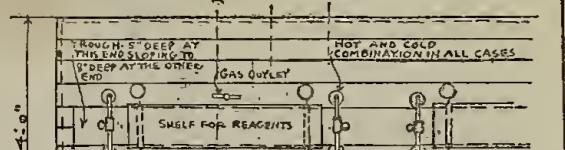
AND PHYSICAL.



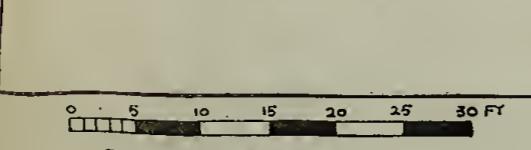
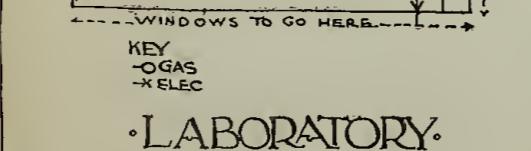
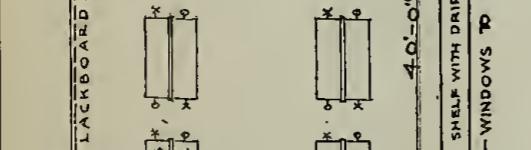
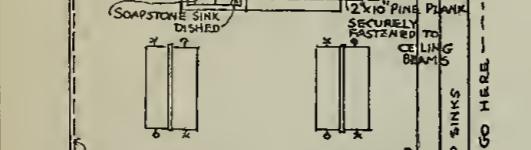
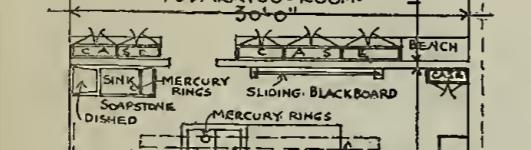
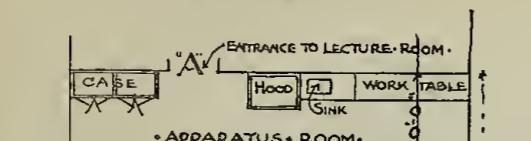
LABORATORIES.



PUPILS TABLE.



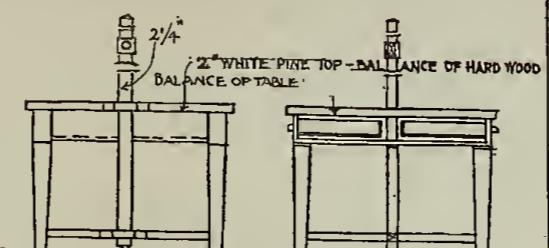
PHYSICAL.



CHEMICAL LABORATORY.

SCALE OF PLANS.

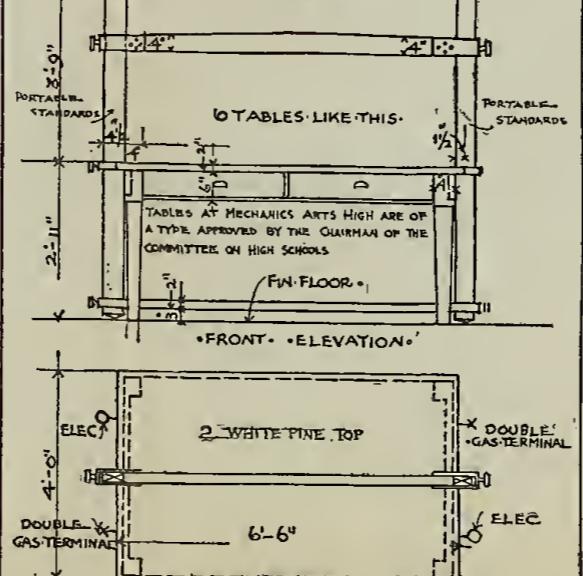
PUPILS TABLE.



END.

SECTION.

PHYSICAL.



LABORATORY.

PLAN.

LABORATORY.

PUPILS TABLE.

AND MARBLE SINK.



PLAN.

FRONT.

END.

SECTION.

BOTANICAL.



FRONT.

END.

SECTION.

AND ZOOLOGICAL.



FRONT.

END.

SECTION.

LABORATORY.

FRONT.

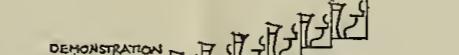
END.

SECTION.

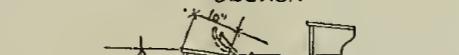
LECTURE.



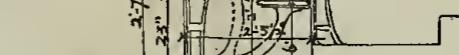
SECTION.



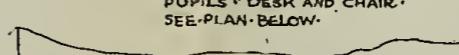
PLAN.



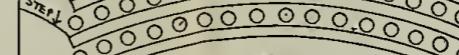
PLAN.



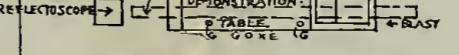
PLAN.



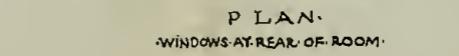
PLAN.



PLAN.



PLAN.



PLAN.

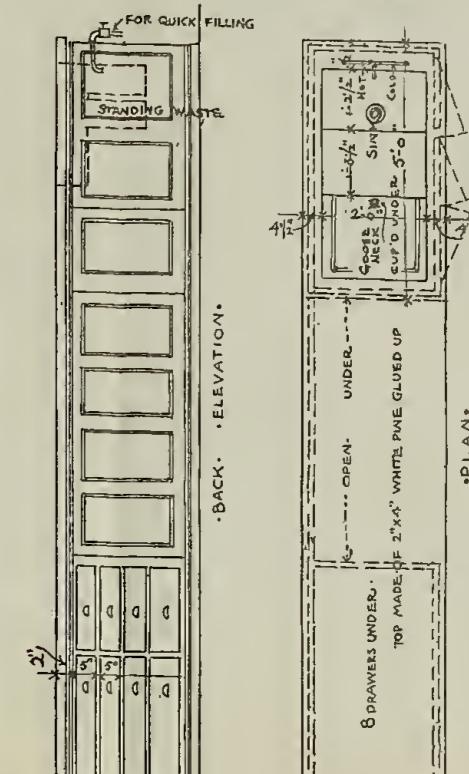
ROOM.

FRONT.

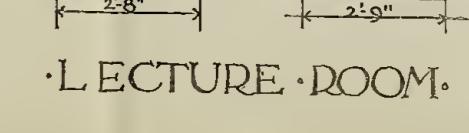
END.

SECTION.

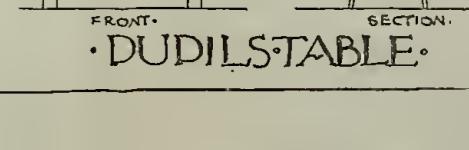
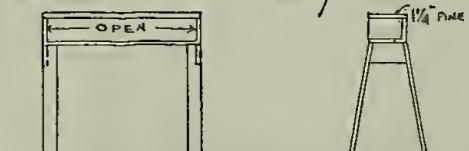
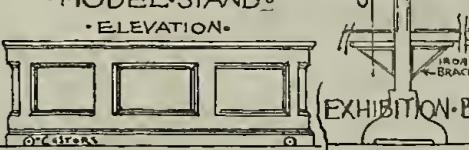
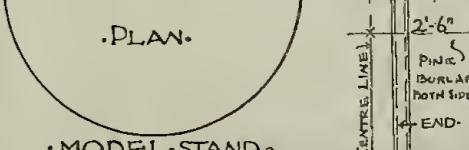
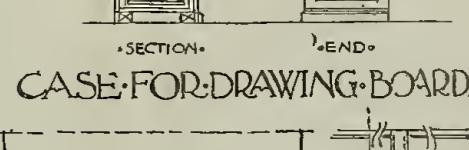
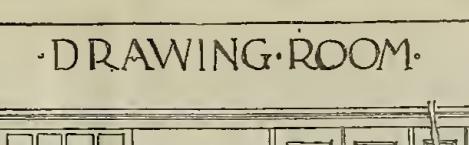
DEMONSTRATION TABLE.



LECTURE ROOM.



DRAWING ROOM.

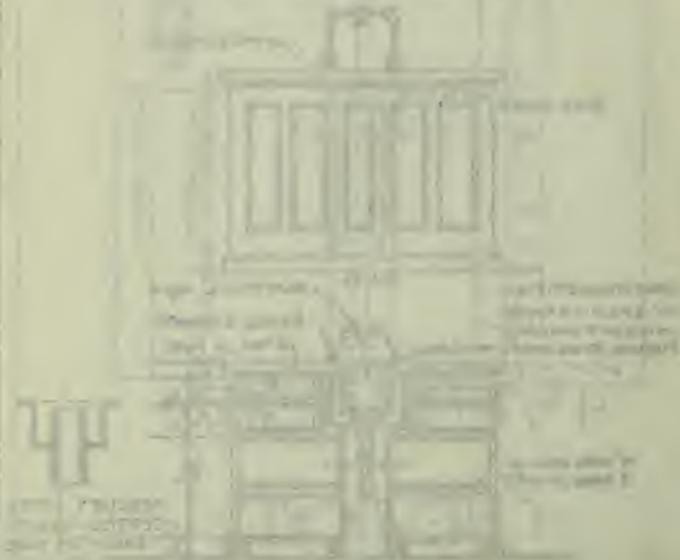


SCALE OF DETAILS.

SCALE OF PLANS.

SCALE OF DETAILS.

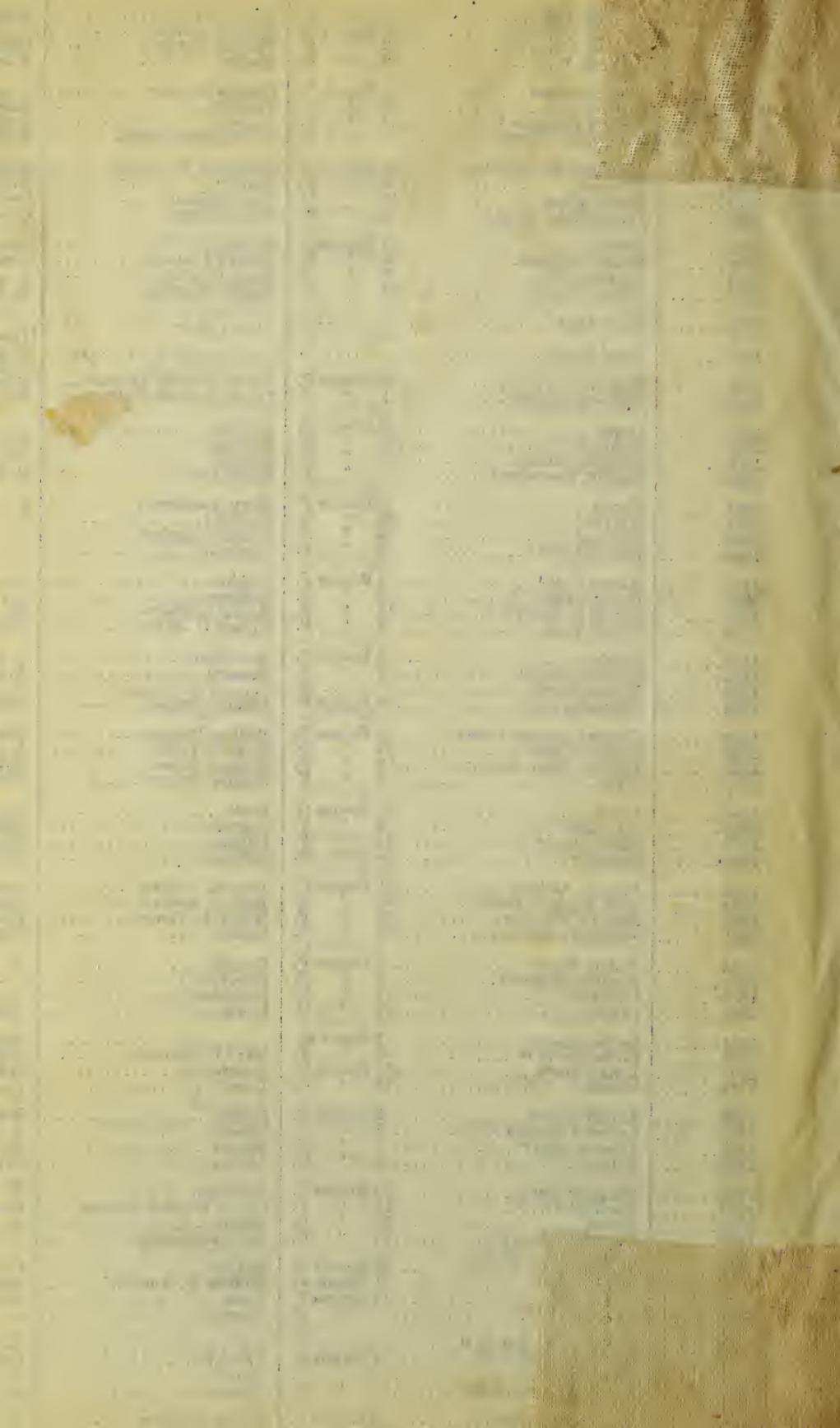
THE DILIGENCE.



CHEMICAL LABORATORY.

DESCRIPTIVE SCHEDULE OF PERMANENT SCHOOL BUILDINGS.

DATE OF COMPLETION.	NAME.	DESIGNER.	ARCHITECT.	DESCRIPTION.	LOCATION OR LOT	AREA OF LOT.	COST OF LOT.	AREA OF BUILDING.	PERCENTAGE OF BUILDING.	COST OF BUILDING.	BOARD NO. OR PUPILS.	BOARD FEE.	COST PER PUPIL.	
1870	Aaron Davis.	12 Rooms P.	Dearborn.	Charles A. Cummings.	2d Class, 3 Stories	16,300	\$17,400.00	5,040	84,672.62	60,21	600	\$74.70		
1871	Alfred W. May.	6 - P.	Bogart.	E. M. Wheelwright.	2d - 1 Story	11,035	5,545.36	4,510	41,066.00	60,21	300	139.87		
1872	Alvord.	13 - G.	Adams.	Lewis H. Blanchard.	3d - 3 Stories.	20,400	13,750.00	3,500	117,103	19,949.76	0,17	109	159.99	
1873	Adams and Chestnut street.	2 Rooms P.	Frothingham.	Joseph H. Blanchard.	2d - 2 Stories.	10,000	6,000.00	2,000	12,000	6,000	629			
1871	Adams-street.	2 - P.	Gilligan Stuart.	Schoolehouse Agent Department.	3d - 1 Story	10,000	30,865.75	2,054	61,036	5,018.00	0,16	700	35.18	
1873	Adams-street.	4 - P.	Agassiz.	E. M. Wheelwright.	2d - 2 Stories.	14,553	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Adams-Dunbar.	6 - P.	V.	L. M. Webb.	2d - 2 Stories.	15,165	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Andrews.	9 Rooms P.	Quincy.	E. M. Wheelwright.	1st D - 3 - 2 -	12,374	47,566.29	4,628	145,961.94	0,25	600	151.67		
1870	Appleton-street.	12 - P.	Hovey Training.	Emerson & Schermer.	2d - 2 Stories.	28,455	28,455.00	2,500	72,106	4,500	1,000	150.75		
1872	Axa Gray.	4 - P.	Christopher Gilson.	George A. Clough.	2d - 3 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1872	Attarson.	8 - P.	Henry L. Pierce.	Hoyt & Rogers.	2d - 2 Stories.	14,781	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1874	Baldwin.	0 - P.	Washington.	Griffith J. F. Bryant.	2d - 2 Stories.	12,374	47,566.29	4,628	145,961.94	0,25	600	151.67		
1870	Baldwin-street.	6 Rooms P.	Billings.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1872	B. F. Treadwell.	8 - P.	Wadsworth.	Thomas H. Hart.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Benjamin Dean.	8 - P.	P.	C. J. Bateson.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Benjamin Pope.	8 Rooms P.	Cotton.	C. J. Bateson.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1874	Bennett.	7 - P.	Bennett.	J. Foster Oliver.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1876	Bennett Branch.	6 - P.	Bennett.	George A. Clough.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1871	Bidwell.	10 - P.	Bordman.	C. J. Bateson.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1872	Bishop-Chaverin.	10 Rooms P.	Blackburn.	Brafford & Lewis.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1872	Bishop-Chestnut.	10 - P.	Bordman.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Bishop-Woodbury.	10 - P.	Bordman.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brownlow.	10 - P.	Bordman.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brewster Annex.	4 Rooms P.	Borer Walcott.	Morton et al.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brownstone High.	2 - P.	Borer Walcott.	Morton et al.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brownstone High.	10 - P.	Bordman.	C. J. Bateson.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brownstone High.	10 - P.	Bordman.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brownstone High.	10 - P.	Bordman.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brownstone High.	10 - P.	Bordman.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
1873	Brownstone High.	10 - P.	Bordman.	E. M. Wheelwright.	2d - 2 Stories.	10,000	4,224.44	4,641	91,036	9,194.28	0,16	700	141.69	
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B. F. L. Binder
SEP 28 1910

